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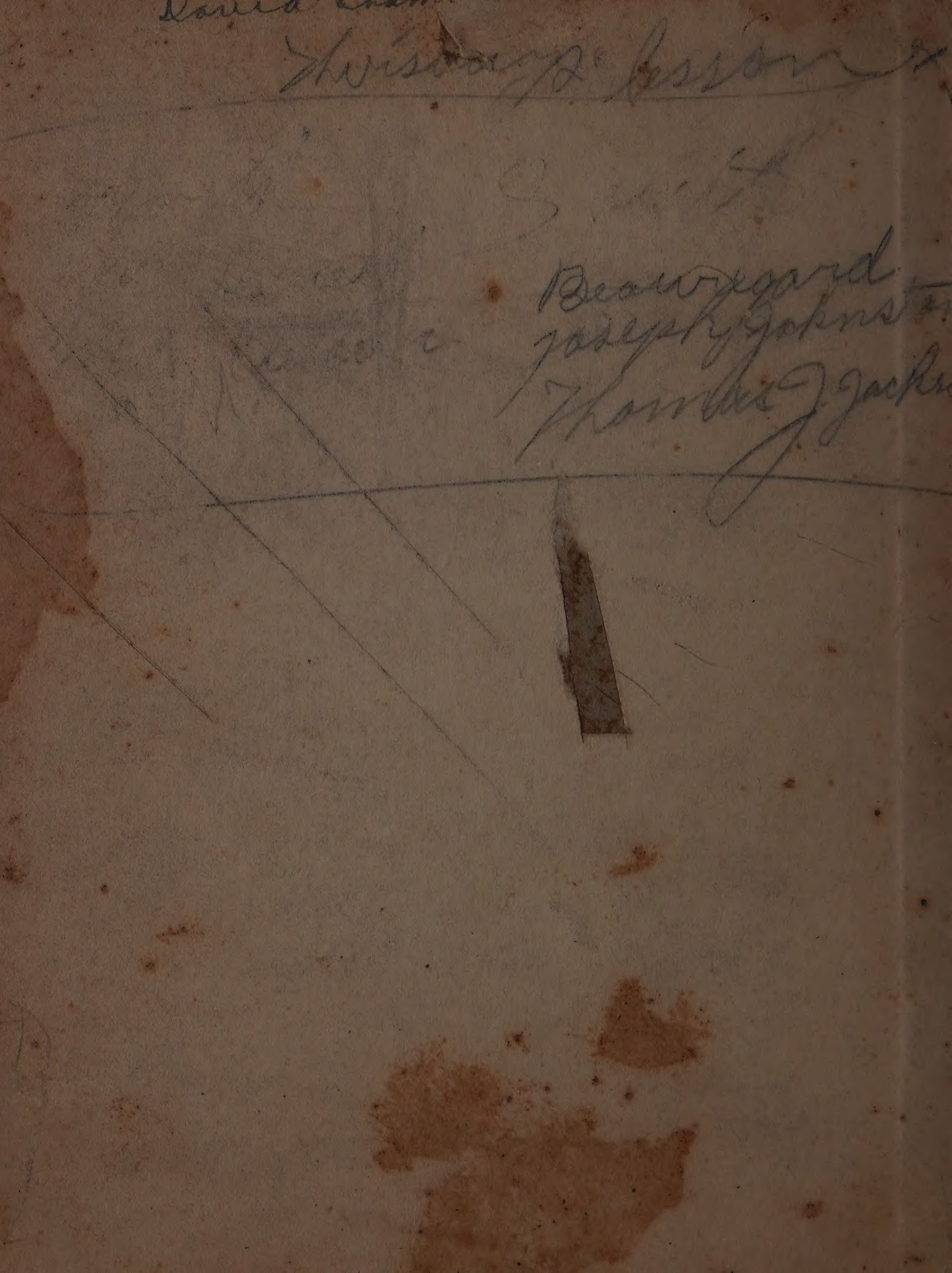

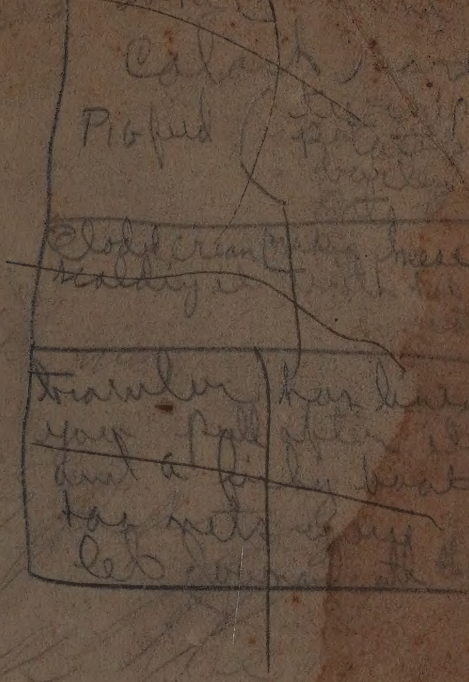
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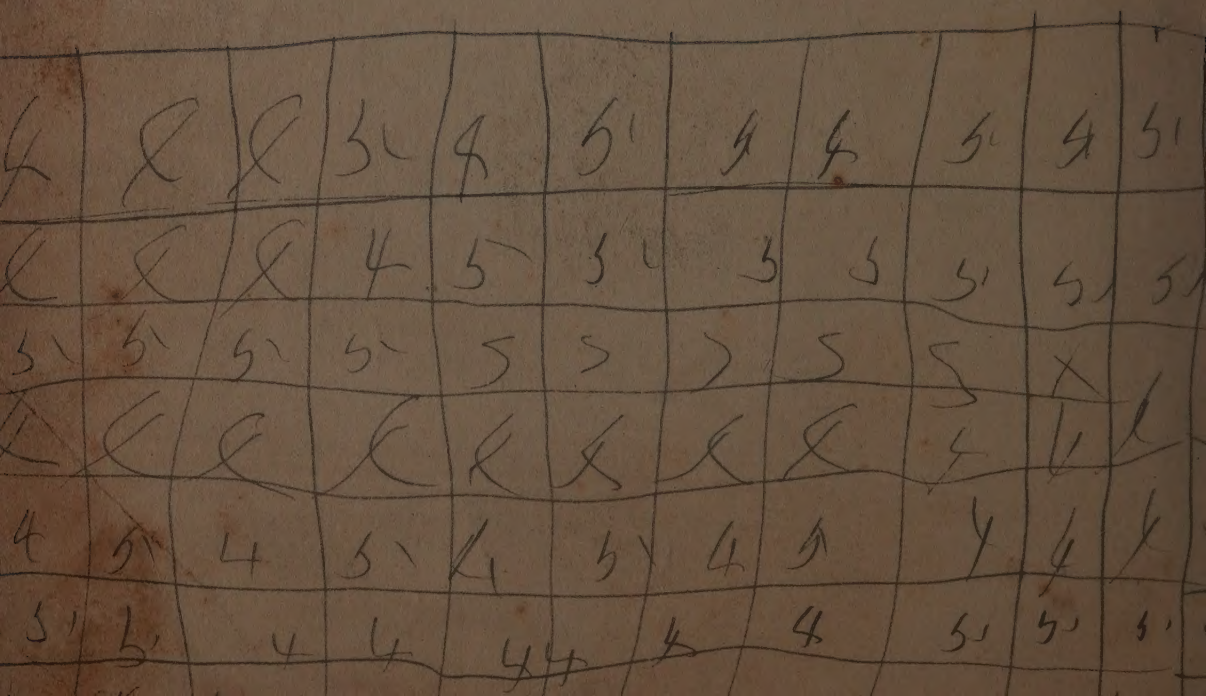

DODGE-LACKEY
ADVANCED GEOGRAPHY

By

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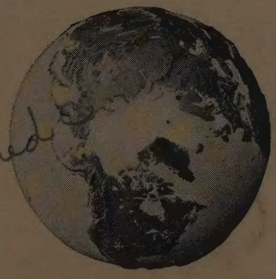

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THE PREFACE

The purpose of the elementary school is to give youth certain essential information, and so to train his mind and to make use of his abilities that he can continue his own education in the school of life. The working tools that will be most useful in continuing his self education are the principles and generalizations that form the core of each essential branch of human knowledge. But such generalizations should not be considered as things by themselves or as ends in themselves. They must be built up and supported by careful analysis and synthesis as the facts and relationships in any field of study become better understood and as rapidly as the mental development of the learner makes possible.

The first book of this series, through a presentation first of the geography of the home region and then of the several continents, gave a background of knowledge that is a natural basis for this second volume. Here the work opens with a review and an elaboration of certain relationships that have become increasingly significant in the earlier years of study. The section "Elements of Human Geography" is therefore a review and a point of departure.

As a point of departure the first section is a natural introduction to the later regional studies which are to be approached from the human viewpoint. Human geography is not a mere collection of facts about life conditions or an exposition of human and life relationships to physical features of the world. Leaders in the field have studied the geographic complex, as seen in any region, and have found certain relationships between life and its surroundings to be so world true that they suggest a natural point of approach to regional geography—an approach that is both enlightening and appealing.

The "Elements of Human Geography" therefore suggests the point of view to be used throughout the later years of school work if geography teaching is to be made worth while and of enduring significance to the pupils. In such a human study of each of the many political sections of the world, the physical and the life surroundings in which the people find themselves must be made clear, because we cannot understand people unless we also understand the conditions under which they are living.

Human facts should not, however, be an appendix to a lengthy presentation of the physical features. They are the most interesting, often the most obvious, features to be seen in any region, as every traveler fully appreciates. Hence only so much attention should be given to the physical side of geography as is essential to the purpose of the study of geography as a whole. The selection of facts to be taught should therefore be made for a purpose, and that purpose should be an understanding of human conditions and relationships.

Today the world is one great commercial whole and almost every part is intimately related to all other parts. No region is independent. All regions are interdependent. Industry and commerce are therefore essential parts of human geography, and a knowledge of the various elements entering into them is necessary for an understanding of the relationship which exists between various human groups.

This volume is intended to be a human geography in spirit and in content. The point of view is especially to be seen in the character of the problems which introduce and close each section of the text. It is not the thought of the authors that any one problem can be made the key opening a door to the understanding of any one section. Hence there have been selected several problems of permanent interest in the solving of which the pupil is led to study a region in a broad and an inclusive way.

It is expected that these "aids" will help make classroom procedure less monotonous and more stimulating than the usual topical outline that has so long dominated lessons in elementary-school geography.

If the human viewpoint in geographic study should be accepted by the next generation because it is the natural method of approach, geography will become, as it should be, a subject of everyday usefulness in securing an understanding of the new world relations that are destined to become more complex and more vital as the years pass.

The geography of the world is ever changing, as with progress it must, and he who would advance with the world about him must be able to understand the new geography as it unfolds from day to day and from year to year.

To the young people of today who must prepare to advance with the almost incredible advance of the times, this volume is dedicated in the sincere hope that to them geography may prove an everyday source of usefulness.

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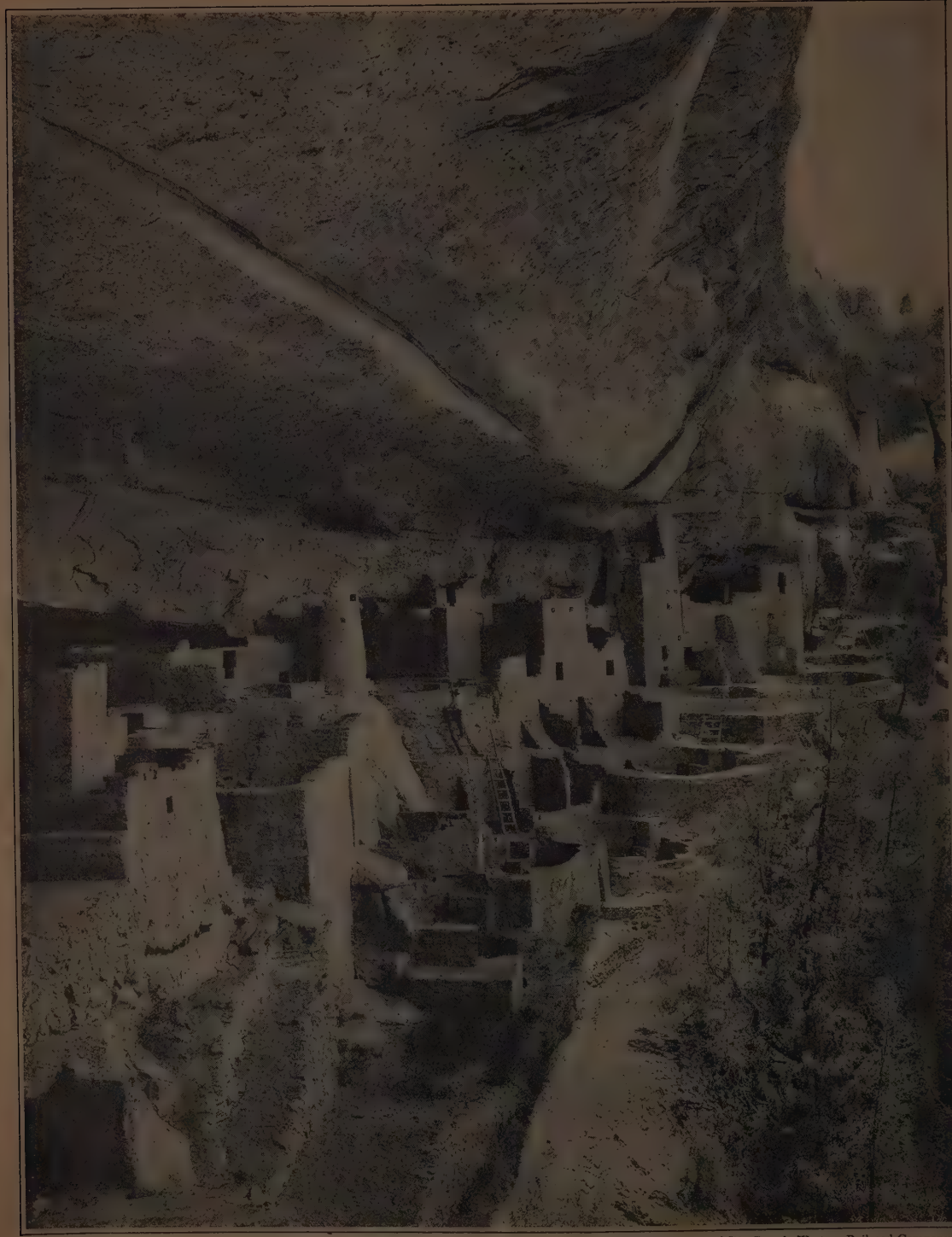
PART I

ELEMENTS OF HUMAN GEOGRAPHY



Courtesy Denver and Rio Grande Western Railroad Company

Cliff Palace, Mesa Verde National Park, southwestern Colorado. These ruins with their towers, walls, numerous rooms, and underground chambers are a splendid example of the skillful work of the cliff dwellers. The small windows high up on the face of the great, overhanging rock show how these ancient people provided themselves with retreats in out-of-the-way places.

DODGE-LACKEY ADVANCED GEOGRAPHY

PART I

ELEMENTS OF HUMAN GEOGRAPHY

FIG. 1. **A frieze from an ancient Assyrian palace.** The panel is of beautifully colored tiles. Each tile was made, decorated, and baked separately. The first object at the right is a plow. The next is a fig tree. Can you name the other objects? Find the names of some famous cities of ancient Mesopotamia (Fig. 434). Find all you can about the explorations of Mesopotamia.

HOW THE EARTH HAS BECOME KNOWN

1. THE WORLD OF LONG AGO AND OF TODAY

THE LESSON FORECAST

1. What written records tell us about people of long ago.
2. Why we do not have a complete record of ancient peoples.
3. The regions of which we have the earliest written record.
4. Some things the ancient Egyptians and Babylonians did.
5. Why early peoples found the valleys of the Nile and Euphrates good places in which to live.
6. Why these peoples did not know about other lands.

How the story began. The story of how man has learned to make better and better use of the resources about him, that is, to make a better living for himself, is long and interesting. Men have lived on the earth a long time, but only in modern times have they learned through the use of coal and power to develop manufactures and commerce. We know little about how the earliest people lived, except as we learn about their food, their clothing, and their houses from the remains sometimes found buried in the earth, or from their monuments or the ruins of their buildings that are found in many parts of the world (Figs. 1 and 4). Our knowledge of man really dates from the time when he learned to make written records of what he was doing and thinking. Written records recently discovered in Egypt, for example, show us that these people were interested in many of the things that are of interest to us. Writing is one of the greatest inventions man has ever made. The earliest writing of which we know was symbols pressed in clay or cut into stone (Fig. 2). Later the alphabet of letters was worked out, although some peoples, as for example the Chinese, still use signs which stand for one or more words. Then words and sentences were used in written records.

The early great nations. The earliest people who left written records lived long ago in the valley of the Nile and in the valley of the Euphrates. The great cities of

Courtesy Museum of University of Pennsylvania

FIG. 2. **Babylonian writing on a brick.** This financial record for the temple estate at Nippur was made by the scribes for the estate and dates back to 1309 B.C.

As long ago as 4000 B.C., Nippur, located in the Tigris-Euphrates Valley, was a great Babylonian city. Consult Fig. 434 for the location of these rivers.

How old is this record? Can you tell how the writing was done? Look for similar pictures in books on ancient history.

OROC

FIG. 3. **A stone carving from an Egyptian temple.** This temple stood on the Nile River near the site of modern Aswan (Fig. 399) about twenty-two hundred years ago.

Here may be seen the guardian goddesses of Upper and Lower Egypt blessing the king.

At the left of the three figures stands Sebek, the god of the cataract region of the Nile. Sebek was always represented with a crocodile's head. Can you tell why?

Explain how the dry climate of the country has helped to preserve these interesting old monuments and records. Look for other pictures and for explanations of ancient Egyptian writing.

ancient times, among them Babylon, were situated in these valleys. From the written records and other remains we know these valleys were good places in which to live, for the climate was warm, the soil was fertile, and the rivers furnished an abundance of water. Crops could be raised easily, materials for spinning and weaving were at hand, and there was plenty of food for both man and his animals. From the earth the people secured stone and clay and with these they built magnificent cities and monuments, some of which we are just learning about.

These people also knew how to use metals, to carve in stone (Fig. 3), and to make brick. Yet while they knew how to do many things, their world was small as compared with the world we know today. As we know now, the earth was then inhabited by many other peoples, but the people of those ancient nations did not know it, for they had no means of traveling long distances and thus meeting other peoples. They had no mails or telephone or other means of communication. They had not developed trade because they did not know people who might wish to buy.

2. HOW PEOPLE HAVE LEARNED ABOUT NEW REGIONS

THE LESSON FORECAST

1. Why people sought new lands.
2. How explorers and traders have made the known world larger.
3. How and where trade was carried on in ancient times.
4. What Columbus hoped to find.
5. What the Spanish sought in America.
6. Why Europeans came to our east coast.
7. Some reasons for polar explorations.
8. The five chief reasons for exploration of new lands.

The work of the explorer and trader. People first learned about new countries largely through the work of explorers and traders who often faced great dangers and hardships on their journeys into unknown lands and across strange seas. Explorers and traders have opened up pathways for travel and trade and brought back fascinating tales of adventure in strange lands. As centuries have passed, the world has become better known until today only a little of the earth's surface remains unexplored. The early nations, dwelling mostly about the Mediterranean, led in exploring new oceans in search of new lands. They discovered North America and South America and the route around Africa. Once these new routes of travel were known, other people began to use them, and today the oceans, once feared by sailors, are busy routes of travel and trade. Explorers are today going into the far north or far south, or into the center of Africa or South America to learn more about regions that are still almost unknown (Fig. 5).

Courtesy Carnegie Institution, Washington

FIG. 4. **A fine example of Maya Indian carving.** This stone tablet, erected in 487 A.D., is part of a ruin in Guatemala, Central America. It represents Yum Kax, the maize god, dropping kernels of corn on a human head. Why were the American Indians so interested in corn? Perhaps this monument represents a Maya idea similar to ours of Mother Earth.

The extent of ancient trade. As new countries and new peoples and products have been discovered, trade has gradually developed between the older nations and these new peoples. Europe was carrying on trade with southern and eastern Asia long before Columbus started on his wonderful journey out over the unknown Atlantic. This trade had to be carried on largely by caravans over long and dangerous land routes. Hoping to reach the Orient by an easier and a quicker route, Columbus sailed west, but instead of reaching the Orient he discovered America and the New World.

The early search for wealth in America. The people who lived in America at the time of its discovery had little to trade, but those who lived in

Pathé News

FIG. 5. **Commander Byrd taking off on his polar flight.** In the plane are Commander Byrd and his pilot, Floyd Bennett. They are just leaving Spitsbergen for their journey to the North Pole.

On map Fig. 427 find Spitsbergen, now known as Svalbard. Was this a better starting place for a flight to the North Pole than the northern coast of Greenland? What is your reason for thinking so? Look up the story of their famous flight to the pole.

Why is polar exploration so difficult and dangerous? Can you find some stories of early explorers to the Arctic? Name the explorer who was the first to discover the North Pole; the first to reach the South Pole.

Mexico and Peru mined great quantities of gold and silver. Hence the Spanish people soon began to explore these new lands in order to get possession of their rich resources.

The discovery and settlement of our eastern coast. The world has, however, not all been discovered and explored by men seeking trade or gold. Our country owes much of its early settlement and development to the men and women who came to our eastern shore from the Old World either because they could not worship as they wished in their home country, or because they did not like to live under the kind of government maintained there. Even today many people, immigrants as we call them, come to America because they feel they are not being well treated by their home governments. Others come because they think America is a good country in which to live, or because they know they can get more money for their labor here than they can at home.

Another motive for exploration. Some of the world has become known to us simply because daring men have had a desire to discover new lands and peoples and to visit regions civilized men had never before seen. Thus they have added to our knowledge of the world. The North Pole and the South Pole were discovered by men who liked adventure and the pleasure that comes from being the first to reach a new region.

A desire for trade, for riches, or for freedom, and a love of adventure or discovery are the five great motives that throughout history have led men to learn more about the world. These same motives lead men on today, for, although no great lands remain to be discovered, there is yet much to be learned about the countries and people of the world.

3. HOW WE CAN LEARN ABOUT MAN'S USE OF THE LAND

THE LESSON FORECAST

1. Number of people in the world today.
2. How man leaves evidences of his former presence.
3. What making a living means.
4. How the people of the world help one another.
5. Why men differ in ways of making a living.

Royal Canadian Air Force

FIG. 6. **Bear River, near the northern coast of Nova Scotia.** This airplane view shows some of the ways in which man changes the earth's surface. Trees and shrubs once covered much of the land. What has happened to them? If the land were more thickly settled, would there be more or fewer changes in the surface? On what kind of slopes are the forests? On what kind are the tilled fields? Explain the location of the bridge over the river.

How man changes the surface of the earth. Today most of the world is well known and is fairly well occupied by people. Over seventeen hundred million people live on the earth, some in great cities, others in small villages. Wherever man has lived he has left traces that tell us much about his life and work (Fig. 6).

If we were to fly over an unknown country in an airplane, we could probably tell whether or not man had been living there. We might see the trails that he had made as he traveled back and forth, or the shelters and other buildings he had built. We could see the places where he had tilled the ground or had cut down the forests and thus changed the surface of the earth. Or perhaps we could see where he had quarried rock or made dams to hold back the water in streams.

Even if the region had been deserted for some time there would still be certain signs of its occupation by man. Possibly there might be the ruins of a home or an inclosure for animals. In certain parts of our country there are interesting evidences of former occupation by people of whom we have no written record (Frontispiece). From a study of certain things they have left behind them, however, we can learn something about how these early people lived and what they did for a living. We can learn what skill they had in making tools or in drawing and something of their religion.

FIG. 7. **A vegetable and fruit market in the tropics.** The people in the picture are semicivilized natives of the island of Sumatra, Dutch East Indies. Find these islands on the map (Figs. 478 and 509).

Notice how these merchants display the things they have to sell. Would the fruit and vegetables displayed in the windows of a city market in our country be arranged much differently?

Read sec. 188 and make a list of spices used in your own home that might have come from the Dutch East Indies.

How man makes use of his surroundings. Man's greatest problem in making a living is how best to make use of the natural conditions surrounding him. For instance, if he happens to be a farmer he must know not only what crops are best for his soil but also how to select those crops that will grow and ripen under the weather conditions which prevail in the region in which he lives. Then, too, he must know how to produce something that other people will need. By selling certain products (Fig. 7) which he raises and that he himself does not need he will be able to buy others that he does need. Thus people, whether they live near one another or far apart, may all work together, or, as we say, coöperate with one another.

Man's unceasing struggle to make a living. The story of man throughout the years is always the story of his struggle, sometimes under great difficulties, to make the best of the conditions about him. Man everywhere has had to make a living in one way or another from the earth. He does it now, as he always has, in different ways according to the conditions under which he lives. But no matter in what part of the world man has made his home he has always had to have a few certain things in order to thrive and prosper. These things man has secured in many different ways, and without them he would not be here now.

Before man can trade with his neighbors, either near at hand or far away, he must first make not only a living but a little more than that. He must not only maintain himself and his family but must also have a surplus for trade.

We frequently think of foreign countries and of sections of our own country in connection with the products they have to sell. But the chief work of any people is first to secure as much as they can of the necessities of life.

SOME RELATED PROBLEMS

1. Find out if anywhere in your community traces of early Indian life have ever been discovered.
2. Suppose all the people were to move out of your community. Name ten signs which would prove that people had once lived there.
3. See what you can find out about some of the prehistoric monuments or records left by ancient dwellers in North America; in South America.
4. What important grain and what widely used plant has America contributed to the world?

Ewing Galloway

FIG. 8. **A great commercial crop in California.** The rich alluvial soils of the Sacramento–San Joaquin Valley (Fig. 208) are well suited to the raising of vegetables. This potato crop averaged over 962 bushels to the acre. In most places in our country less than one-half as many bushels per acre is considered a large crop. Find out how many bushels of potatoes the farmers in your part of the country would consider a good crop. Smooth potatoes are the most desirable. Why is it easy to till this land?

THE NECESSITIES OF LIFE

4. WHAT THE NECESSITIES OF LIFE ARE

THE LESSON FORECAST

1. Why everyone must be a buyer and a seller.
2. What is meant by producing a surplus.
3. What are the necessities of life.

Why everyone is a buyer and a seller. We have already learned how neighbors coöperate with one another by exchanging their products, and how every worker in order to be able to buy what he lacks and wants must have something to sell that other people need or wish to have (Fig. 7).

Everyone is a seller and a buyer, selling something of which he has a surplus, or more than he needs (Fig. 8), in order to buy certain other things he needs but does not and often cannot produce. A cotton grower, for instance, may not raise only cotton. He may in addition produce as much as he can of the food needed by his family and his animals.

What is meant by the necessities of life. In order to live and do our work we must all have the necessities of life. Our necessities are first of all food, clothing, and shelter (Frontispiece and Fig. 9). But we cannot do our work well and be good producers if we have only the bare necessities of life. We must be in good health, have the proper tools, and feel safe while we are at work, in order to produce the best results. To be healthy and happy, we should have a chance to rest and to play, as well as to work, and this is just as true for grown people as for children. No matter what we are doing we all need tools to do our work, for the time is long past when human hands were the only tools needed.

Then, too, whether we are working, resting, playing, or sleeping, we must have the feeling that we are safe. The feeling that all is well means better health for us and leads to greater activity in thinking and working.

5. HOW SEARCH FOR CERTAIN FOOD MATERIALS HAS CAUSED TRADE

THE LESSON FORECAST

1. The food of our earliest ancestors.
2. The influence of the discovery and control of fire.
3. How the domestication of plants and animals helped man.
4. The use of spices and how they helped to promote exploration.
5. The importance of salt to man and animals.

FIG. 9. **A Lapp family's summer home.** Lapps live in a cold region of Europe which gives them only the simplest food, clothing, and shelter. They raise herds of reindeer which they drive from one pasture to another. Can you name the necessities the reindeer furnish the Laplanders?

The food of early man. The earliest men of whom we have any record lived on wild plants and fruits and on the flesh of animals and fish which they ate raw. In time, however, these people of long ago learned how to make a fire and then how to cook their food. The discovery of fire was important, for it not only gave men better food but also enabled them to live with greater comfort in cold regions.

How the domestication of plants and animals improved conditions. Man also learned how to domesticate plants and animals; that is, to raise them for his own use. From the earliest times certain animals have been used for food or to furnish skins or fibers for clothing (Figs. 9, 10, and 64). Other animals have been taught to work and carry loads. Only a few have been domesticated, but many kinds of plants are raised in different parts of the world. Today we bring plants from other parts of the world to add to our own crops. Indeed, we now draw on the whole world for our food and other necessities.

Why man needs spices. We all know food tastes best when it has either some sweetening or seasoning in it. In early times the only sweetening the people knew about was honey made by wild bees. Today sugar is used and easily secured almost anywhere (Figs. 11 and 253). But this is not true of some of our most common seasonings.

FIG. 10. **A small herd of bison or buffaloes.** Bison meat was the chief food of the Indians and early settlers on our western plains. How did they preserve the meat? How did they use the skins?

Where are bison found today? Look up the bison, its migrations, the bison hunt, and the disappearance of the bison.

Do you think this is a wild or a partly tamed herd? Give the reasons for your answer. What domestic animal has replaced the bison on our western plains?

Courtesy Secretary of Agriculture, Cuba

FIG. 11. **Bagging house of a cane-sugar mill, Cuba.** After the cane is crushed, the juice is pressed out and boiled until it crystallizes into coarse brown sugar. This product is bagged and sent to refineries where it is made into finer grades of sugar.

Name other kinds of sugar. What do you call the juice of the sugar cane after it is boiled until it is thick?

Name another raw material used for making sugar. What kind of sweetening did the Indians and early settlers in America use? What can you tell about that product today?

Spices such as pepper, cloves, and cinnamon are produced only in hot regions, and are therefore important articles of trade.

The quest for spices and other condiments. It was partly because the people of Europe wanted spices that trade between Europe and the hot countries of southeastern Asia was developed long before the continent of North America was discovered.

But the one product most important and most widely used for seasoning is salt. No human being or animal can live long without it. Salt has always been an article of trade. We know the Indians of our own country sometimes traveled long distances to get salt. The tribes living in the Mohawk Valley of New York had great quantities of salt and traded it with tribes that lived far away from them.

Today the trade in wheat, meat, and other foods between different parts of the world is very great. Salt and spices, so common that we forget their importance, were a chief cause of trade in early days.

6. WHY CLOTHING IS NEEDED

THE LESSON FORECAST

1. Why people in hot countries need to wear clothing.
2. Clothing best suited for use in hot, dry countries and in cold countries.

Ewing Galloway

FIG. 12. **Travel in southern Algeria.** In a dry, hot country, the loose white clothing worn by travelers protects them from heat and sun. Part of the turban can be pulled down to shelter the eyes from sun and sand. Note how closely the clothes fit at the neck. Can you tell why? Would the people in a dense tropical forest wear the same kind of clothes?

3. The value of dark-colored and of light-colored clothing.
4. Different animal and vegetable fibers used for making cloth.
5. Other materials used for clothing.

Clothing suitable for hot countries. The second great need of all people is clothing to keep them warm or to protect them, according to where they live. In hot countries clothes are used as a protection from insects and rain or sun, depending on whether the section is wet or dry (Fig. 12).

Clothing adapted to cold weather and cold regions. In cold regions people make their clothing from skins because these keep out the wind and so prevent the body from getting easily chilled (Figs. 9 and 13). Dark-colored clothes are much warmer than light-colored ones because black absorbs the heat from the sun while white reflects it. In dry regions it is often very hot in the daytime and very cold at night, and people living in such regions must carry extra clothing with them. The Indians on our western plains use blankets because of the cold nights. The clothing people wear therefore tells us something about the conditions under which they are living.

Courtesy American Museum of Natural History

FIG. 13. **Building an Arctic home.** The Eskimos are building an iglooyak of hard-packed snow blocks. Does their clothing tell you whether this is winter or summer? See Fig. 12 and compare the clothing of the travelers with that of the Eskimos. Why do skins make the best clothing for Eskimos?

The most widely used materials for clothing. The materials most used for clothing are fibers from plants like cotton or flax, or animal fibers such as wool, hair, and silk, furs from wild and domesticated animals, leather from skins, and rubber made from the juice of a plant. But all materials are used for the same purpose—to protect the body.

7. THE USE OF SHELTER

THE LESSON FORECAST

1. What is meant by shelter, and why it is needed.
2. Strange shelters of today and of long ago.

By Cowling, from Ewing Galloway

FIG. 14. **A street scene in a native village in East Africa.** The houses, built of interlaced poles so the air can pass freely through the walls, have thatched roofs. Which could be built more easily, these houses or the house seen in Fig. 13? Which would last longer? Compare the clothing of these people with that of the people in Fig. 12. What difference do you see?

Courtesy *Chinese Journal of Science and Arts*

FIG. 15. **The entrance to a Chinese cliff house.** Would there be much light and air inside a cliff house? Why do you think people live in houses such as this?

Notice the wall in front of the house. It is made of bricks which have been pressed into shape and dried but have not been hardened by firing. In this country what do we call sun-dried brick?

Notice at the left that a part of the cliff has washed away. If more of the cliff washes away, what do you think will happen to the house?

Photograph by Donald MacMillan. Courtesy American Museum of Natural History

FIG. 16. **An Eskimo family in Greenland.** The tupik, or summer tent, of these Eskimos was made of forty to fifty tanned sealskins stretched over poles.

Compare this shelter with that of the Lapp family in Fig. 9 and of the iglooyak in Fig. 13. Do any of you know how to put up and take down a tent? If so, tell the class how to do it.

Notice the summer and winter clothing of the Eskimos. What differences do you see?

3. Materials used for making shelters.
4. The shelters of the early settlers and pioneers in this county.
5. Why certain people must have shelters that can be easily moved from place to place.

Why shelter is needed. The word shelter means protection. Shelter is necessary to protect people from the weather and from dangers, especially at night when people are asleep and not on the watch (compare Figs. 9, 13, 14, 15, and 17). Shelter is generally provided for domestic animals as well as people. That is why on farms there are other buildings besides the one that provides shelter for the family.

Some strange kinds of shelter. A shelter does not always mean a house, for many people live in homes quite different from the houses in which we live. In some parts of China, for instance, people live in caves dug into the sides of narrow river valleys (Fig. 15). Many of the early peoples lived in caves or found a resting place and protection under a sheltering rock, just as animals often do.

Materials from which shelters are made. People make shelters from the best material at hand (Figs. 13 and 14). The homes of the early settlers in this country were in forests. Since they had no sawmills, their houses had to be made of logs fitted together. Even today in certain parts of our country log houses are still to be found. In some countries, as in parts of Russia (Fig. 378), the homes and other buildings are of logs.

How kinds of shelter vary under different conditions. In those countries where trees are few, people make their buildings from stones, or perhaps from blocks of clay, or even from pieces of sod in which the grass roots hold the soil in place. In dry regions, as in parts of New Mexico or Arizona, people often live in shelters that can be moved easily, for they must travel about with their herds and flocks in search of new feeding grounds. Most of the Indian tribes of the West lived in movable tents or tepees, as their shelters were called, for they had to move from place to place to hunt the buffaloes which gave them meat, skins for their shelters, furs for clothing, and thongs for sewing.

It is possible then to learn much about a country in which people live from pictures of their shelters as well as from pictures of the clothes they wear (Figs. 14, 16, and 17).

8. TOOLS AND POWER NECESSITIES

THE LESSON FORECAST

1. Why man is dependent on tools.
2. What is meant by a factory.
3. Where man gets power to run his machines.

By Burton Holmes, from E. Galloway

FIG. 17. **A town on the Menam River in Siam.** In this warm country, houses do not need solid roofs and walls. By building over the river these people need not buy land for their homes.

Which do you think would be most difficult to construct, the cliff house seen in the picture Fig. 15 or one of these river houses?

Large crops can be grown on the fertile soil of this warm, moist country of southeastern Asia. Do you think this would affect the value of the land? What industry besides agriculture do you think these people could engage in easily?

Ewing Galloway

FIG. 18. **Threshing in Irak.** As the donkey and horse draw the heavy sledge over the straw, the grain, broken loose from the husks, drops out and falls through the straw to the ground beneath.

How does this method of threshing compare in cleanliness with threshing by modern machinery? Do you think people raise large crops when they thresh in this way?

Find out the old name of the country of Irak.

From magazines and catalogs cut and mount on cardboard pictures of different types of threshing machines.

Ewing Galloway

FIG. 19. **The power house of a great hydroelectric plant.** Here, in Shasta County, California, the water brought down a mountain side is first made to generate power in the form of electricity.

Power from the descending water may be made to run machinery at each level on the mountain slope. Farther down the water may be used to irrigate the soil in the valley.

Why is it easier to develop electricity from water power in a hilly or mountainous region than in a flat country? Is it better to bring the water down the slope in pipes than in open ditches? Why?

4. How machinery increases the amount of work one person can do and how it lowers the cost of production.
5. How machinery lowers the cost of certain necessities.
6. How things were made in our country in pioneer days.

Man's dependence on tools. Even the most primitive (Fig. 18) and savage peoples usually have some sort of tools or implements. Every man must work in some way, but he cannot accomplish much unless he has tools with which to work. The writer in order to work must have pen or pencil and paper, the teacher needs books and blackboards, the farmer his implements with which to till the land, and the housewife her cooking utensils with which to prepare the food. Our factories are really buildings that provide shelter for people and the tools they use while at work.

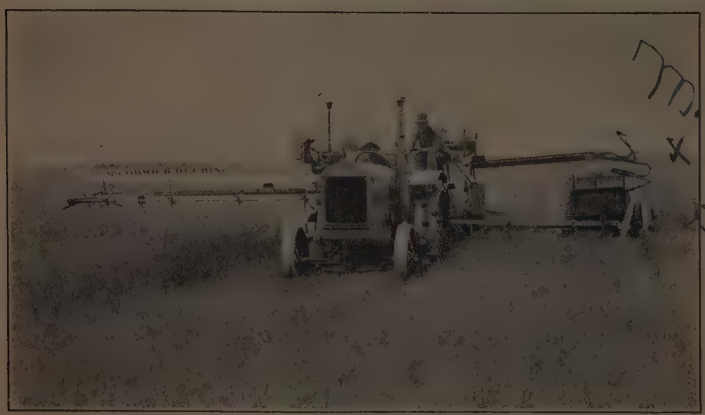
How man gets power to run machinery. In this age tools and the different kinds of power are certainly among man's greatest necessities. We have learned how to make the wind turn mills and pump water. We harness rivers to turn the wheels of machinery and to make electricity that is used for power and lighting (Fig. 19). We get steam from water which has been heated by coal, wood, or oil. We burn gasoline to run engines and drive automobiles.

Early man could hardly have got along without the help of the horse (Fig. 20), ox, burro, and reindeer to draw and carry loads and to do other work. Today by means of machines run by power one man in a short time can do more work than many men could once do by hand (Figs. 21, 26, and 27). It does not now take so many people to produce the necessary food as it did when all farm work was done with hand tools (Fig. 25). The use of farm machinery, for example, leaves more people free to engage in other lines of work, such as manufacturing, or running railroads. Machinery lowers the cost of production, and because of this we are able to have many things we could not afford if they were all made by hand, as they once were.

How the pioneers and Indians secured the things they needed. In the early days of our country all the clothing, shoes, and furniture had to be made by hand in the home. There were no great factories in which such things were made, no railroads

FIG. 20. **A horse-power threshing machine.** The horses furnish the power to run the thresher by walking on a treadmill inside the frame. Let some one find out and explain how a treadmill works. The horses at the left are resting while they wait to take their turn on the treadmill.

Compare this method of threshing with that shown in Fig. 18. Can more work be done by this method? Will the grain be cleaner and will the straw be more useful? Where farmers use this method of threshing can larger fields of grain be planted? Contrast this picture with Fig. 466.



Courtesy International Harvester Company of America

FIG. 21. **A harvester-thresher on a Kansas wheat ranch.** This, one of the latest combination harvesting machines, cuts the grain, threshes it, and pours it into a wagon box ready for the trip to the elevator.

In a ten-hour day this machine harvests and threshes from forty-five to fifty acres of wheat and spreads the straw over the ground. Here it is at work on a 2,000-acre wheat ranch.

Would this machine be profitable for a man who owned a farm of only 100 acres?

to carry goods to and from markets, and hence people had few of the conveniences we now have. Before white men brought horses to this country, the Indians could only move from place to place and pursue game on foot.

9. WHY WE NEED PROTECTION

THE LESSON FORECAST

1. The need of other protection besides that of shelter.
2. How life and property are protected in cities.
3. The need for a protected water and food supply.

Protection of life and property. We have seen how shelter protects people from the weather and also from many outside dangers. People need to be safe while at home, but they should also feel safe while they are going about their daily work. The early settlers in our country lived in constant fear not only of Indians but of wild animals. At home or abroad they kept their guns near at hand ready for instant use when danger arose. They never at any time felt safe. Now in all our large cities and towns we have officers of the law whose business it is to protect the people and their property both day and night. These officers are necessary for our protection. They help us to feel safe at home, on the street, and at our daily work.

Protection of the food and water supply. We must also feel sure that the food we eat and the water we drink are pure. The meat, as well as the other food we eat, is usually inspected to see that it is free from disease and dirt, while the water supply for large cities is generally kept free from impurities. No one person can see to all these things for himself, so we have men whose only business is that of protecting our food and drink. These ways of caring for people and protecting them from danger are as necessary today as was protection from savage Indians and wild animals in the early days of our country.

10. WHY WE NEED REST AND RECREATION

THE LESSON FORECAST

1. The need for a day of rest each week and for an occasional vacation.
2. The need for playgrounds and recreation areas.
3. The business of furnishing places for rest and recreation.

The need for rest and recreation. Rest and change of work are necessary if people are to be able to do their best and get enjoyment out of living. In earlier days vacations were thought unnecessary. Now we know that an occasional vacation is a good investment because one does better work afterward. We rest one day in seven and we have laws as to the number of hours a man may work at certain occupations without rest. City, state, and national playgrounds are provided so that people may find rest and relaxation in seeing new sights and getting away from their work for a while. The work of the people who run concert halls and theaters, motion-picture houses, summer playgrounds, and pleasure resorts is useful because they are furnishing many people with the recreation they need for their own good.

SOME RELATED PROBLEMS

1. What are the six great needs of life and why is each essential?
2. Have you ever sold anything so that you might buy something you wanted? If so, tell about it.
3. Make as long a list as you can of the surplus products of your community that are sold for use in other places.
4. Spread three or four drops of water on the palm of your left hand and the same amount of oil on the palm of your right hand. Wave both hands in the air for a short time. How does the left hand feel as compared with the right? Can you tell why there is this difference in feeling? Why does oil rubbed on the body protect the natives in a hot, rainy country?
5. Fill two fruit jars with hot water and seal them tightly. Wrap one in a cotton blanket and the other in a woolen blanket. After waiting an hour, test them to see which has lost the more heat. Explain why the water in one of the jars has cooled more rapidly than that in the other jar. Why is woolen clothing particularly good for cold weather and cotton clothing for warm weather?
6. What kind of houses did the pioneers in your community build? Give the reasons.
7. Why did the early settlers in Ohio build log houses while those in Nebraska built sod houses? In your community what materials are now used for building houses?
8. Name several kinds of tools and machinery in use in your neighborhood and tell how each one helps the owner.
9. Explain how the power stored up in coal or in a waterfall is made to furnish light for our homes.
10. Explain how officers of the law in your community protect you.
11. Why are some places better suited than others for vacation and recreation?

PRODUCTS FOR HOME USE OR MANUFACTURING AND TRADE

11. PRODUCTS SECURED THROUGH TILLING THE SOIL: FARMING

THE LESSON FORECAST

1. What agriculture is.
2. The meaning of extensive farming and of intensive farming.
3. Why the same crops are not grown everywhere.
4. Why plants need water.
5. The crops and the importance of the growing season.
6. What is meant by irrigation.
7. The need for laborers.
8. The importance of machinery and power in farming.
9. The need for care in selecting crops to be raised.
10. Importance of maintenance crops as well as surplus crops.

Work a necessity. Except in countries where people get their food and supply their other needs by gathering products that grow wild, men have to think ahead or plan for the future in order to get the necessities of life.

What is meant by agriculture. More people in the world are engaged in agriculture than in any other occupation. Agriculture is the raising of animals and the raising and storing of crops that are useful to man. The crops that are raised vary in different countries and even in the different parts of our own country. By means of trading, however, the products of all parts of the world can be secured almost anywhere.

Extensive and intensive farming. Where there is a great area of good land that can be used for one special crop, as for example in many of our wheat-growing sections, the farmers plant a large area (Fig. 22). Then, even though the land yields only a half or a third of what it might be made to produce, the farmer, because he has planted a great deal of land, harvests a large crop. This method, because of the great extent of land cultivated, is known as extensive farming. In many parts of our country, especially near large cities, and in other countries, such as China where often the farms are very small and the farmers are crowded together, the land is cultivated more intensively. This means that a man tries to raise all the products he possibly can on a small area. He makes what land he has yield all it can (Figs. 23, 24, and 362).

Courtesy Kansas State Board of Agriculture

FIG. 22. **Plowing with a tractor.** This tractor is pulling five disk plows. With this combination of machines a large field can be prepared for planting in a very short time.

What kind of power is being used? Find out how many furrows these disk plows can turn at once.

Would the great wheat ranches of Kansas and other states be possible without modern machinery?

Do such farm machines help to increase the food supply and make food cheaper?

What other uses have you seen made of tractors? Visit a farm-implement store to learn the different kinds of machines used in your community.

Royal Dutch Airline, from OROC

FIG. 23. **Bulb fields in Holland.** In the densely peopled little country of Holland each farmer must make the best possible use of every bit of his land. Flower bulbs are raised because they grow well in the rich, damp soil and are valuable enough to repay intensive cultivation. Compare this picture with Fig. 362.

Could machinery be used in tending and harvesting these fields?

Do you think the canals in the picture are for irrigation or transportation?

Visit a store, a greenhouse, or a nursery where flower bulbs are sold. Ask some one to tell you the names of some different kinds of bulbs and where they are grown.

FIG. 24. **A large truck garden near Paris.** Farming land near Paris is valuable and must be made to yield well. With plenty of fertilizer and water, and the choice of quick-growing varieties of vegetables, several crops a year may be easily raised. What kind of farming do we call this?

See Fig. 102 to find the length of the growing season in your community. What are the more important crops grown in your vicinity? Where are they sold?

Importance of soil in crop production. The success of any crop is dependent upon many things. Some plants grow and thrive where others would not grow at all. We now know fairly well what crops will succeed best in various parts of our country. Hence some sections are devoted almost entirely to corn, or to wheat, or to cotton, or to some other single crop. Some crops thrive best on one kind of soil, and others on a soil that is quite different. For example, soil that is good for potatoes may be poor for wheat. Every crop, while it is growing, must have a large amount of water fed to it from the soil, for that is how the plant gets much of its food. Hence dry soils, no matter how rich they are, cannot be used for crops unless the ground is kept supplied with water.

The relation of crops to the growing season. The growing season must be just right to make plants thrive and mature. Growing plants everywhere need just the right temperature, the right amount of sunshine, and the right amount of rainfall. If the season between the last frost in the spring and the first frost in the autumn is short, then the crops raised must be those that grow quickly, such as potatoes, certain

Courtesy McCormick Deering Company

FIG. 25. **Cutting grain with a cradle.** A man with a cradle working steadily all day can cut the grain on about two acres. He needs two helpers, one to bind the grain into bundles and one to set the bundles up in shocks. Find out how a cradle differs from a scythe or a sickle.

grains, and some vegetables. Cotton (Figs. 102 and 155) and sugar cane require a long growing season in which to mature. They are grown, therefore, only in the warmer parts of our country where the summers are long.

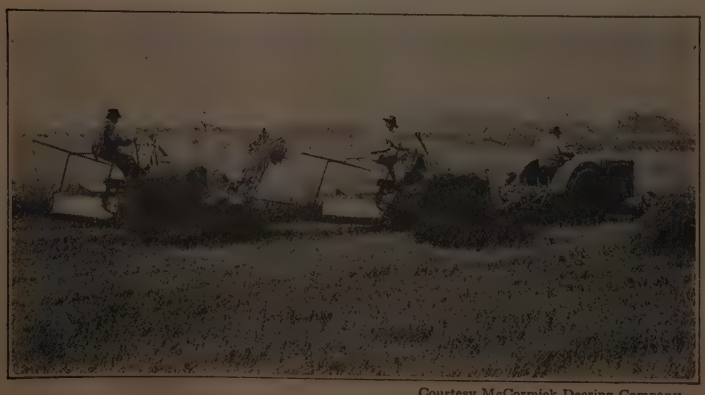
Farming by irrigation. In regions where other conditions are favorable but where it is very dry during the summer, the rainfall of winter is often held in reservoirs and fed to the land during the growing season (Figs. 218, 360, and 419). We call this method of supplying water to crops irrigation.

Relation of labor and machinery to farming. The success of agriculture, however, depends on several things besides a good soil and a favorable climate. There must be plenty of laborers to do the necessary work and to run the machines that are now so much used in farming. If a farmer cannot get help just when he needs it, his work may end in

Courtesy International Harvester Company of America

FIG. 26. **A model of the first McCormick reaper.** This reaper, made in 1831, could cut six times as much grain in a day as a man using a cradle could cut. It took three or four men to rake, bind, and shock the grain cut by the reaper. Study the picture. How many people do you see working? What is each person doing?

Look up reports on McCormick machines. Find out if farmers are still using them.



Courtesy McCormick Deering Company

FIG. 27. **A tractor and two binders at work.** The binders cut about sixty-four acres of grain in a day and tie it in bundles. Only where the ground is very rough are three men needed.

A man with a cradle (Fig. 25) can cut two acres of grain in a day. What percentage is that of the grain cut by the tractor and binders? In the same time what percentage could the McCormick reaper (Fig. 26) cut?

failure. In the early days of farming in this country only hand implements (Fig. 25) were used, and consequently it took many men to do the work that is now done by a few men with machines. We now have power plows that will do the work of several men and several teams of horses in preparing the ground, and harvesting machines that will cut and thresh grain and pour it into bags much faster than a large gang of men could do it by hand (Figs. 20, 21, 26, and 27). Potatoes are also harvested with machines, and even machines to milk cows are used in many dairy regions. But as yet no really successful machine has been made for picking cotton or picking up potatoes. These crops must be gathered by hand, and demand a great deal of labor at harvest time.

The relation of products to markets and marketing. The kind of crop a farmer grows also depends a great deal upon whether he can readily find a market for the surplus he has for sale. If he is far away from well-populated places, he can grow grain, or raise hogs or cattle or sheep, because such products do not have to be marketed immediately. If he lives near cities, he can produce milk, vegetables, or berries that must be used at once. But now that we have refrigerator cars and fast trains, even such perishable products can be carried long distances.

What a farmer raises, therefore, depends upon a number of things. He must know first what crops will grow best in the soil and the climate of his region. Then he must choose those which he can cultivate successfully with the labor available, and which he can market easily and profitably.

In studying any agricultural region we are likely to consider only the crop a farmer raises to sell. But on most farms many other crops are raised for use as food for the family and for the animals. Where dairying is carried on, most of the land is devoted to hay and corn, the food needed for the cows (Figs. 28, 126, and 189). Even in much of the cotton-growing section corn, oats, and hay must be grown for the horses, cattle, and mules needed on the plantations. So the crops one sees growing in the fields are not always those for which the section is known.

FIG. 28. **Filling a large silo.** A silo is a tall, round building of wood, tile, or cement in which green fodder can be stored for use in winter. Silos are now used in many parts of the country and are among the most important buildings found on dairy farms.

Cornstalks with the ears of corn are cut up while green and blown through a pipe into the silo by an engine. This green fodder is called silage or ensilage. It is one of the best foods for dairy cows.

Perhaps there is a dairy farm not far from your home. Make a visit to the farm and ask the owner to tell you what he uses to fill his silo and what keeps the silage from spoiling.

12. PRODUCTS SECURED BY HERDING ANIMALS: GRAZING

THE LESSON FORECAST

1. Grazing, one of the oldest occupations.
2. Products of the grazing industry and the life of the herders.
3. Why grazing is an important industry.
4. Why more and more animals are raised on farms.

The meaning and importance of grazing. One of the oldest occupations in the world is grazing, which is the raising of grass-eating animals for their flesh, or skins, or wool. In many sections of our own country flocks and herds are raised. In certain dry regions of the world grazing furnishes the people with food and other necessities for their own use. Flocks of sheep and goats are kept for their milk, their meat, and their wool or hair. Since these animals live chiefly on grass, grazing requires a large area of land over which they can range in search of food (Fig. 216). The people in such regions often travel with their flocks from place to place, living in shelters that can be moved easily.

Importance of the grazing industry. Grazing is one of the great industries of the world. Not long ago by far the greater part of our meat came from animals that ranged over the great plains of our country. The demand for meat, however, has increased greatly, and some of this grazing land has proved valuable for other purposes. Because of these changed conditions, much of our

Erwin E. Smith, Bonham, Tex.

FIG. 29. **Cattle on the Shoe Bar Ranch, Texas.** Notice the water hole in the picture. Do you think this is of any special value to the ranch?

Do you know what branding cattle means? Draw a design that might be used for branding cattle on this ranch.

Explain how these cattle change grass into products man needs. Have some one at the meat market help you trace a piece of beefsteak from the grassland where the animal was pastured to your dinner table.

Allen

FIG. 30. **Western lambs grazing on a blue-grass farm.** Many farmers of the Middle West go to ranches farther west to buy lambs, which they fatten for market on the rich pastures of their farms. Do you know why they do not raise the lambs themselves?

Show how man uses sheep to transform semiarid vegetation into valuable human necessities.

Find out why sheep can graze on shorter grass than can cattle.

meat now comes from animals raised on farms in those sections where the grass grows well, as in Kentucky and Illinois (Fig. 30). Here the extent of land necessary to keep an animal is much less than in the drier regions, hence more animals can be raised on less land.

13. PRODUCTION OF THE FORESTS: LUMBERING

THE LESSON FORECAST

1. The extent of the forest areas of our country.
2. The importance of the forests to the early settlers.
3. Why lumbering is usually carried on far from densely peopled centers and the importance of the industry.
4. Conditions favorable for the growth of forests.
5. Why forest trees are being planted in certain sections of the country.

By De Cou, from E. Galloway

FIG. 31. **Scene in a California redwood forest.** The timber of the redwood forests is one of our most valuable resources for lumber. What are the uses for redwood lumber? Have any of you ever counted the rings of growth on a stump or the end of a log? How does this tell you the age of a tree? Find out how old are some of the large redwoods of California.

The extent of our forests. Another great source of materials which are of use to us is the forests (Fig. 31). Many great forests are in the western and southern parts of our country, and forests once covered most of the eastern part. Even in our densely populated states, like Connecticut and Rhode Island, forests still occupy large areas. The forests of the eastern shores gave the early settlers logs to build houses, and lumber for ships, for furniture, and for the many useful tools they made by hand.

The importance of the lumber industry. Many tools that at one time were made of wood are today made of metal. Although metal is being used more and more for various articles, forest products are still used extensively in building and in manufacturing, and lumbering remains one of the most important occupations of the country. Most lumbering, however, is carried on far from where people live (Figs. 32 and 33). The lumber we see on passing freight trains

Courtesy Chamber of Commerce, Duluth, Minn.

FIGS. 32 AND 33. **Lumbering in a northern Minnesota lumber camp.** Trees have been cut down and the logs prepared for the sawmill. Fig. 32 shows how heavy snows help lumbermen get their logs out from places in the forest to which no railroads extend. In Fig. 33. logs are being loaded on flat cars with the help of a steam loader. When enough cars have been loaded to make up a train, they will be hauled to the sawmill. Do you know any other method of transporting logs to the mills?

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FIG. 34. **An English trawling fleet.** These boats are offshore from the Brixham headquarters of the fisheries of a bay on the south coast of England. Brixham lies just south of Exeter (Fig. 325).

Why do these boats use wind for motive power? How are they rigged? Would you like to go far out to sea in one of these boats? Do they help you to understand why fishing is sometimes a very dangerous occupation?

Study the fisheries map (Fig. 79) and make a list of the kinds of fish these boats might bring back.

represents all that most of us know of forests and the lumbering industry.

Where forests grow best. Forest trees grow wherever there is sufficient moisture and where it is not too cold. We do not find trees on the tops of high mountains or near the polar regions. Neither do they flourish in very dry countries. But elsewhere, even in many city streets, trees will grow and thrive.

The lands best suited for permanent forests. Lumbering is carried on mostly in regions that cannot be farmed or in remote parts of our country from which the trees have not been cut. But each year the forests are being cut away and the edges of the great forested areas pushed farther back. In many sections of our country more and more young trees are being planted in order that land not useful for farming may be growing a valuable crop which in later years will furnish a lumber supply. In some places this is done so the people may be able to enjoy the beauty to be found in forests.

14. IMPORTANT PRODUCTS OBTAINED BY FISHING AND HUNTING

THE LESSON FORECAST

1. Why hunting and trapping are occupations well adapted to pioneer life.
2. Why hunting is still carried on.
3. The dangerous life of the fisherman.
4. Where fishing is carried on.
5. How fish are marketed.

Areas best adapted to hunting. In most new countries the occupation of hunting is a most necessary one, supplying people both with food and with furs for clothing. As a country becomes settled, however, the wild animals are either killed or driven away, and hunting becomes less and less important. Yet in the wilder and more remote sections of the world hunting and trapping are still carried on because furs are so widely used for clothing. There are many people who make their living entirely by hunting. These men not only get a profit from the furs of the animals killed, but the game animals of a region furnish many products which the people need every day.

Fishing as an occupation. Fishing differs from hunting because it is a much more important source of our food supply. Fishing, when carried on upon the ocean or the larger lakes, is often a dangerous occupation, for fishermen must spend much time on the water in small boats (Figs. 34, 332, and 340). Because the products of the fisheries can be canned or salted, fishing provides an occupation for a great many people besides fishermen. These canned products furnish

an excellent food for many people who can seldom get fresh fish because they live too far from the fishing centers.

15. PRODUCTS OF THE EARTH: MINES AND QUARRIES

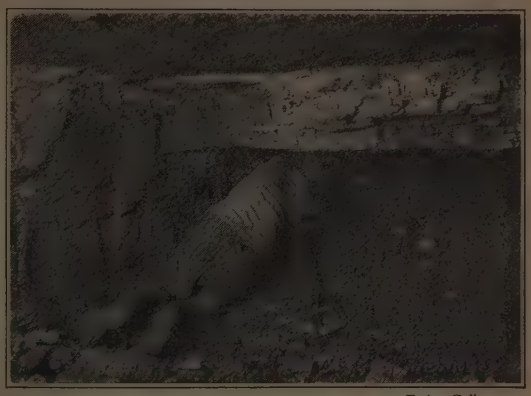
THE LESSON FORECAST

1. What is meant by mining.
2. How quarrying differs from mining.
3. The most valuable products of mines and quarries.
4. Water for domestic use and drinking, a product of the earth.
5. A valuable liquid mineral found within deep rocks.

What is meant by mining and quarrying. Two important occupations that furnish materials for immediate use or for use in manufacturing are mining and quarrying. Mining is the securing of ores, metals, coal, and precious stones and other materials from the rocks of the earth. Mining is usually carried on below the surface of the ground (Fig. 35). Quarrying is the business of securing valuable rocks from the earth. From quarries we get rocks for building, for roads, and for monuments (Fig. 196). From mines come iron, the most useful metal in the world, coal, used for power and heat, gold and silver, copper, and many other metals used for different purposes (Fig. 95).

Liquid products of the earth. From within the rocks of the earth we also get water for drinking, oil or petroleum, the products of which are used for light, power, and lubrication, and natural gas used for heat and power. Gasoline is a mineral liquid derived from rock oil or petroleum.

The increasing importance of mining. With the development of manufacturing and with the increasing use of coal for power, and of steel for buildings, bridges, ships, and tools, mining naturally has increased tremendously in importance. Today it is one of the leading occupations of the world.



Ewing Galloway

FIG. 35. **A coal miner at work.** This miner is clearing away the material beneath a vein of anthracite. Sometimes, if the vein of coal is thick, machines are used for this work. Get samples of different kinds of coal and label each with its name and that of the place from which it came.

SOME RELATED PROBLEMS

1. Make a list of the chief field, garden, and orchard crops grown in your home region.
2. Is the farming in your community extensive or intensive? Explain why.
3. What surplus products are raised in your community and what products are grown only for maintenance?
4. Explain the use of some agricultural implements you may have seen.
5. What products used in your own home do you think come from the grazing industry?
6. Find out from what section the lumber comes that is used in the buildings in your vicinity. What kinds are used most?
7. Are there more or fewer trees in your community now than there once were?
8. Have you or any of your family anything the hunter or the trapper helped to get?
9. What is the difference between hunting for recreation and hunting as a business?
10. Why is the life of an ocean fisherman especially hazardous?
11. What earth products from your own and near-by regions are used for building purposes? Which ones are shipped in?
12. How is your home supplied with water?
13. What conveniences have you now that you would not have if iron ore could not be obtained?

Asahel Curtis Photo Co., Seattle

FIG. 36. **Lumber on the docks at Seattle.** The lumber piled on this dock has been squared at the sawmill from just such big logs as those to be seen in Figs. 32, 33, and 233. But the squares are still raw material to be used in other industries.

Some of the lumber is being loaded on a boat bound for Japan. There it will be worked up into wood finishings of various kinds.

Squares are of different dimensions. Visit a lumber yard or a carpenter shop and ask some one to tell you the dimensions of different squares; to explain what is meant by quarter-sawed lumber. Name some of the finer woods used in the manufacture of furniture.

PRODUCTS MADE FROM RAW MATERIALS: MANUFACTURING

16. MANUFACTURING YESTERDAY AND TODAY

THE LESSON FORECAST

1. How manufacturing has influenced the growth of cities.
2. What is meant by manufacturing.
3. What is meant by raw materials.
4. How various industries often depend on one another.
5. Why many people now work together in factories.
6. Reasons for the growth of factories and of manufacturing.

What is meant by manufacturing and by raw materials. Manufacturing is the occupation that, more than all others, has caused people to live in large groups and to build cities. Manufacturing means making things; that is, it means taking a raw material or a product and making some article from it. The housewife who makes bread from flour is a manufacturer, just as is the miller who grinds the wheat into flour. The material which comes to the factory or mill to be manufactured is usually called raw material and the article made from it a finished product. Sometimes the finished product of one factory or mill is the raw material for another factory. For example, while pig iron is the finished product of the iron furnace in which it was melted and refined, it is raw material for the steel mill. Lumber from a sawmill is raw material for the carpenter who may wish to build a house or make an article of furniture (Figs. 36, 261, and 344). Thus different industries are dependent on one another, just as manufacturing is dependent for its raw materials on the occupations already studied.

Early kinds of manufacturing. In early days clothing, shoes, wagons, tools, implements, and the many other things people need, were made near the places where they were to be used. In each little village there were small shops and factories which were busy at least part of the time. Clothing was often made in the homes, and many farmers made their tools and the shoes for their families during the winter when they were not busy with outdoor work.

Why manufacturing has increased. Today we are living in an age of factories, and

"International Newsreel"

FIG. 37. **An old grist mill near Sudbury, Mass.** Water from the mill pond furnished the power that turned the mill wheel and ground the grain. Can you explain where the pond is located? Why was this mill built in a valley rather than on a hillside? Can you tell what kind of material was used to build the mill?

What raw materials do you think were brought to this mill? What were the manufactured products and their by-products? How do you suppose the early settlers brought their grain to the mill?

Try to find pictures of some primitive methods of grinding corn.

most of the goods we use is made by machinery in large plants, some of which employ thousands of workmen. When our country was first settled, most people lived on farms and gained their living from the soil. Hence the population was scattered and there were no large cities. The number of people, however, has grown tremendously. Because of this, manufacturing has had to develop on a vast scale in order to supply the needs and demands of our millions of people. Manufactured goods are also sold to people in other parts of the world in exchange for the products we buy from them.

17. WHERE MANUFACTURING IS MOST SUCCESSFUL

THE LESSON FORECAST

1. Conditions favorable for manufacturing.
2. Reasons why there are many large cities in northeastern United States.
3. Change in the kind of power used in manufacturing.
4. Advantages of cities located upon good transportation routes.
5. The cheapness of water compared with land transportation.
6. How manufacturing increases the value of materials.

The location and growth of manufacturing cities. Manufacturing can be carried on most successfully where raw materials can be easily and cheaply secured, where power is to be had for running machinery, where men and women can be hired in large numbers to run the machines, and where the finished products can be readily marketed. The larger manufacturing or industrial cities have grown up where most of these advantages are to be found. That is why we have so many manufacturing cities in the northeastern states of our country and thence westward to Illinois. In many cases cities that grew up because of a certain advantage, such as the presence of abundant water power, have continued to grow, although the original advantage is no longer significant.

The first mills in this country were water mills for grinding grain, and for many years water was the chief power used to turn machinery (Fig. 37). Factories were built, therefore, near waterfalls where water could be made to work. Today coal and electricity furnish most of the power for our factories (Figs. 38 and 39). Cities like Lowell, Lawrence, and Fall River, Mass., and many others, which once depended on water

Courtesy Stone and Webster, Inc.

FIG. 38. **How water is turned into electric power.** This great dam, 145 feet in height, lies across the Chattahoochee near Columbus, Ga. At the left stands the power house. Back of the dam stretches a reservoir ten miles in length.

Much of the power generated here operates mills miles away in both Georgia and Alabama. How can water pouring over this dam furnish power to run spindles in cotton mills so many miles away?

Find out how the electric power used in your community is generated. For what purposes is it used?

Southern Air Service

FIG. 39. **An airplane view of cotton mills in Piedmont, S. C.** These textile mills, which are more than fifty years old, were among the first to be established in the South. They use over 24,000 bales of cotton a year.

Power to run these mills is furnished by the Saluda River. Can you tell why the dam in this river was not built higher so that a greater pressure of water could be secured behind it?

List the states where cotton is grown (Fig. 155). Can you tell why more and more cotton mills are being established in the South? (See sec. 67.)

power, long ago ceased to depend solely upon it. The water power, or "white coal" as it is sometimes called, has been turned into electricity. These cities, however, are still great manufacturing centers because they had the advantage of an early start in the making of textiles.

Relation of transportation to manufacturing. In general, cities with good connecting rail or water routes have a great advantage both for receiving raw materials and coal and for shipping the finished goods. Transportation by water is usually much cheaper than by rail, and so goods are often carried as far as possible by water. Often manufacturing cities grow up at the places where goods must be reloaded, as from lake boats to canal boats or railroad cars. This is one reason why cities have grown up at the lower end of Lake Erie, for here the grain and bulky iron ores brought by water can be manufactured into flour and steel to be shipped largely by rail. Another illustration showing how factories spring up where a water route ends is found in the location of sugar refineries in this country. These plants are nearly

Courtesy U. S. Bureau of Foreign and Domestic Commerce

FIG. 40. **A pile of oil cakes.** The cakes shown in this picture were what remained after the oil had been pressed from flaxseed between layers of coarse cloth. The oil cakes are a by-product.

Oil cakes are also a by-product when the oil is pressed out of peanuts or cottonseed. They furnish a valuable feed for cattle. Get a piece of oil cake from some feed store and examine it.

Do you know the name of the oil obtained from flaxseed? This oil is used in manufacturing a large number of useful articles. Can you name some of these articles?

all built at points where raw sugar can be brought directly to them by water.

Why manufactured goods are high in value. Finished products are more expensive than raw materials because of the labor that has been used in making them. Each process in the manufacture of a product adds to its value. Finished products usually are not so bulky as the original raw materials. For this reason a carload of manufactured goods such as steel made from iron ore is more valuable than a carload of the material from which it was made.

18. ASSOCIATED MANUFACTURING INDUSTRIES

THE LESSON FORECAST

1. Some by-products of the flour mill.
2. Why laborers of many kinds go to manufacturing centers.
3. Why textile and steel mills are often near each other.
4. Places where ready-made clothing can be manufactured cheapest.
5. Why manufacturing cities tend constantly to grow bigger.
6. Why smelters and paper mills usually are found near the raw materials.
7. Why many kinds of goods are not manufactured near their markets.

By-products in manufacturing. One kind of raw material may be made into many different products, each of which has a different use. Flour, for instance, is made from wheat, but the finest flour is made only from the white, starchy part of the wheat kernels. The rest of the grain must be used for another purpose or thrown away. But these outer parts of the kernels are valuable for making the coarser flours, such as graham, and feed for cattle. Factories for making use of these coarser parts of the wheat are found near the flour mills. In this way practically nothing of the original raw material is wasted. The same thing is true in other kinds of manufacturing (Fig. 40). This helps explain why some cities have so many different kinds of factories, all dependent upon the same raw materials and upon one another.

The variety of labor in manufacturing centers. Another reason why many kinds of industries are often found in a single city is that the laborers who want work do not all follow the same occupation. Women, for instance, can do the work in textile mills while their husbands and sons do the harder work in near-by steel mills. Or women can work at sewing in the home while the men in the family engage in some

Wm. H. Baker

FIG. 41. **The sky line in a milling district.** These enormous flour mills are located in Minneapolis, Minn., the greatest flour-manufacturing center in the world. They produce nearly 80,000 barrels of flour a day.

From Fig. 183 find where the most wheat is grown. Does this explain why Minneapolis has always been a milling center?

Mount the labels of the popular brands of flour you are able to find advertised in magazines and newspapers. Where was each brand manufactured?

other occupation. This is one reason why much ready-made clothing is manufactured in large cities where a great deal of the work can be done by people in their homes.

How associated industries spring up. For the reasons given in preceding paragraphs, and also for many others, manufacturing cities tend to grow bigger and bigger while the industries carried on become more and more varied. A city may be best known for some one product, but that does not mean that no other products are manufactured there. For instance, we may associate the manufacture of automobiles with Detroit, Mich., that of flour with Minneapolis, Minn. (Fig. 41), that of agricultural machinery with Chicago, that of steel with Pittsburgh, Pa., that of clothing with New York City, that of cotton goods with Lowell, Mass., that of woolens and worsteds with Lawrence, Mass. (Fig. 111), and that of lumber with Cloquet and Virginia, Minn. These are their special products, but a visit to any one of these cities would show many other kinds of manufacturing being carried on there.

How the presence of raw materials localizes industries. Usually smelters and paper mills are found near mines and forests. This is because it is cheaper to ship the refined metals and finished paper than the ores or timber from which they are made. Steel is made largely where coal and iron can be brought together at the least expense; textiles where power and labor are at hand. Only a few kinds of manufactured goods have to be made close to where they are to be sold and used. These are mostly large things, like agricultural machinery, much of which is made in Ohio, Illinois, and Indiana near the raw materials and near the great agricultural section of the country where the machines are most needed.

19. STANDARDIZATION AND MARKETS

THE LESSON FORECAST

1. Why markets are near at hand for many manufactured products.
2. What is meant by standardization.
3. The importance of standardization and how it helps the buyers.
4. Reasons for the standardization of products.

Markets for manufactured goods. Our country is so large that trade between the states is much greater than our foreign trade. Since our industrial states contain the larger part of our population, the markets for many of our manufactured products are near at hand.

Result of the standardization of manufactured goods. That factory products made by machinery can be made exactly alike, or, as we say, standardized, is most important. A salesman can show a sample and promise that the goods delivered will be exactly like

the sample. All shoes of the same size and style are exactly alike; a certain part of a machine is always the same. If a machine breaks, the owner can buy a new part and be sure it will fit. Thus because of standardization a man in any region, no matter how far away from the factories he may be, can order articles by sample and be sure of what he is getting. This was not true when goods were made by hand. One great reason why American machines are used so much all over the world is because they are well made and are standardized.

SOME RELATED PROBLEMS

1. Visit a manufacturing plant in your home region. Find out the source of the raw materials used and the products and by-products made. Why do you think the industry is located where it is?
2. What raw materials for manufacturing are produced in your community? Where are these materials taken to be manufactured and what are the finished products? Why is your home region a good place to produce such raw materials?
3. What is the source of the power used for manufacturing in your community? Do you think such power cheap or expensive? Explain.
4. Why is water power sometimes called "white coal"?
5. Why does ready-made clothing often cost more than that made in the home? Make a list of the things to be considered in estimating the cost of a ready-made dress.
6. Make a careful survey of the furniture in your home. Find out if possible where each piece was made.
7. Why is it often desirable in cities to require all factories of a certain type to be located in the same section?
8. Write a short theme describing some of the advantages your community offers for certain kinds of manufacturing.
9. Why are canned foods usually sold under the name of a certain brand?

HOW TRADE HELPS TO SATISFY MAN'S NEEDS

20. WHAT IS MEANT BY TRADE

THE LESSON FORECAST

1. The necessity for producing a surplus.
2. The surplus of the laborer, of the mechanic, and of the professional and the business man.
3. Why each worker is a buyer and a trader or seller.
4. What is meant by trade.
5. What is the name given to trade between different states or different countries.
6. Why the other products of a region are sometimes more important than the surplus products.

Kinds of surplus products. Thus far we have studied the great occupations and the products they furnish. We have learned that every nation, like every man, must have something to sell in order to buy the things it needs but cannot produce. Every person must in some way produce more than he needs to use, or a surplus, of something that he can sell. The mechanic, the mill operator, the laborer on the farm, in the mine, or in the forest, sells his services in exchange for money. His strength and skill have value, and through the work he does he is helping many others. So, too, in a way, the teacher, the lawyer, the minister, the doctor, the engineer, and the business man, all have something to sell. Their special skill and abilities are just as much products people need and want as are crops from the soil, goods from a factory, or minerals from a mine.

What is meant by trade and commerce. Each person who has something to sell is also a buyer because he, himself, cannot produce everything he needs. Hence he is engaged in trade, although it may be on a small scale. Trade is the exchanging of products. Whether goods are bought and sold by the box, the bushel, or the shipload, the process

is known as trade, and, as we have seen, trade is exchanging the surplus of one place for that of another. When goods are sent from one state to another, or from one country to another, this form of trade is also called commerce. Commerce between states is domestic commerce, that between nations foreign commerce (Figs. 42, 43, 44, and 45).

The relation of surplus for trade to total production. A region or a nation is usually known for its trade in its surplus products. For example, we think of cotton in connection with the southern states, and of corn and meat and meat products with the Middle West. But very often we forget about the great quantity of materials produced throughout the country which are not for sale but are used by the producers themselves. This is especially true of many farm products. As we have already seen, on most farms, at least in the eastern states, a large number of animals are raised for their products or because they are useful in doing farm work. These animals must all be fed, and the area that is used to raise food for them may be greater than that of the land devoted to the crop for which the section is best known. Naturally a person riding through such a region might expect to see nothing growing but corn, or potatoes, or tobacco, when as a matter of fact only a part of the land is used for these crops. If we study only about the surplus products people are raising, we do not get a very clear idea of all that they are producing, although we may learn how they are making a living.

21. HOW TRADE IS CARRIED ON

THE LESSON FORECAST

1. Difference between bartering and selling.
2. The usefulness of money in trading.
3. Why many people are engaged exclusively in trading.
4. Why many countries have colonial possessions.

How goods are bought and sold. We have already seen how a person may trade his labor for money. People who produce things sell the products of their labor and not their labor. In the simplest form of trade one thing is directly exchanged for another. This is known as barter. In the early days of gold mining in California the miners often bartered the nuggets of gold they found for necessities. In some countries today, especially among savage peoples, products are thus exchanged directly. But mostly products are sold to one person and supplies bought from another. The cotton manufacturer sells his cloth or thread to people who sell it again to stores. He gets money, or something that represents money, and then buys what he wants from many other places and people. For example, he buys his raw cotton at one place and his machinery at another. His labor he buys from the people in his mills, while his food and his household supplies he buys from still other people.

The importance of domestic commerce. We have already learned that in every community there must be buying and selling. This gives work to storekeepers and many others. The storekeeper, whether he sells one thing or many, is a necessary business man everywhere. We often forget how important this form of buying and selling is because we are more interested in, or hear more about, the trade between different regions. We know how the iron ores from Minnesota and Michigan are brought down to Illinois, Pennsylvania, New York, and Ohio for smelting; how the cotton of the South is used in the mills of New England; how the wheat of the West furnishes flour for the East; and we know of many other examples of domestic commerce between the states. This commerce exists not only because the people of no one section can produce all the things they need, but also

Publishers Photo Service

FIG. 42. **Packing peaches for market.** At the height of the season, when Georgia peaches are being packed for shipment to northern markets, a packing shed is a busy place.

Why do you think peaches must be carefully packed by hand? How are they kept from decaying while being shipped to northern markets?

In marketing his peaches, what advantage do you think the grower in Georgia has over the man who grows peaches in the North? Is this domestic commerce?

Study the labels on the cans of peaches in your grocery store to learn where they came from. Do peaches thrive in your home region?

La-Cal Pictures, Los Angeles

FIG. 43. **Loading oranges at the port of Los Angeles.** This ship at San Pedro port is bound for Great Britain, so the oranges shipped in its hold are going on a long sea voyage. Try to find out how many miles the ship must go and how many days such a voyage usually takes. Is shipping oranges to Europe domestic or foreign commerce?

Can you tell from the picture how the oranges were brought to the dock? How many crates are being lifted into the hold of the ship at one time?

Why are oranges which are to be shipped long distances picked while not yet ripe? Why is it easier to ship oranges long distances than it is to ship peaches long distances?

because there is most profit in producing the special things for which each section is best fitted.

Trade between countries that have like products. For the reasons already mentioned we have world or foreign commerce between different nations. Some countries of Europe can produce only a part of the food needed. They must, therefore, go to other parts of the world for some of their food, and some of them must also go to other parts of the world for the raw materials (Fig. 45) which they need in their factories. A large part of the food comes from countries where the climate and soil are much like those of the home country. England, for instance, gets much of its food from its colonies in North America and Australia.

Courtesy U. S. Shipping Board

FIG. 45. **Loading cotton bales at Savannah, Ga.** This great ship, the "Tampa" of the American Palmetto Line, is bound for Bremen, Germany.

The boats of this line carry cargoes of cotton, naval stores, phosphate, lumber, cottonseed products, tobacco, and some manufactured goods from the south Atlantic ports to Europe. Among the products named do you find any surplus products of your community? The ships bring back mainly potash and fertilizer.

Tell how the people of Germany and of the United States benefit by this exchange of products.

Courtesy U. S. Shipping Board

FIG. 44. **Unloading a cargo of Brazilian coffee at New Orleans.** Of what use are the small motors on the dock? This ship will carry lumber, rosin, flour, agricultural implements, and petroleum products back to South American ports. Do you think this exchange will benefit both the people in these countries and in the United States? Why?

Trade between countries that have unlike products. In order that the people of a country may have all the things they need, some products that cannot be raised or made at home must be secured from other countries (Fig. 45). For instance, we get our coffee, tea, and spices from other countries because they cannot be grown here (Figs. 44 and 467). Many European countries have found it profitable to maintain colonies or other possessions in warm regions, for these furnish them with valuable tropical products such as rubber, spices, tea, and coffee.

22. THE BUSINESS OF EXCHANGING PRODUCTS

THE LESSON FORECAST

1. Why the business of transportation is important.
2. The importance of roads and railroads.
3. Why certain kinds of transportation are more expensive than others.
4. Why water transportation usually follows definite routes.
5. What is meant by transcontinental lines.
6. The need for transportation routes in all directions.
7. Why the growth of a city depends upon its trade-route connections.
8. What is meant by a trade center.
9. The difference between large cities and villages as trade centers.

Kinds of transportation today and yesterday. In order that products may be exchanged, goods must be carried, or transported, to the place where they are to be used. Transportation is one of the greatest businesses in the world and gives work to many men everywhere. Goods are transported in many different ways. In the wilder and more rugged parts of the world products are often carried from place to place on men's backs. Pack horses, other animals, wheelbarrows, wagons, trains of cars, and automobiles are

Courtesy of *The Auckland Weekly News*

FIG. 46. **Carrying wool to a seaport in New Zealand.** To reach the nearest port, the fine wool exported from this far-away island country must sometimes be carried long distances.

The roads in New Zealand are well kept, but in many places where the streams are shallow enough to be forded there are no bridges. Do you think this condition will be changed as the country is developed? Is there any time of year when the lack of bridges would be a disadvantage to the sheep rancher?

Why can wool be transported long distances by water more cheaply than can fresh fruit?

Canfield & Shook, Inc., Louisville, Ky.

FIG. 47. **Transporting lumber on barges down the Ohio River.** These barges, all loaded with lumber, are passing through one of the locks of the canal which has been built around the falls in the river at Louisville, Ky.

Quantities of such bulky materials as coal and lumber are floated down the Ohio River on barges. Is this a cheaper method of transporting goods than by the railroad? Give the reason for your answer. Can you explain how boats on canals are lifted by means of locks?

used for transporting goods on land; boats and canoes are used on streams, while much larger boats or ships are used on lakes and oceans (Figs. 46, 47, and 48). Today we are beginning to use airplanes to carry goods from place to place through the air (Fig. 49).

Some products may be carried in many different ways from the place where they are produced to the place where they are used. The rubber in the eraser at the end of your pencil probably came over land and water from a far distant and much wilder region of the world than that where the eraser was made and is used.

The development of roads and railroads. Transportation on the land means that there must be a route or road over which goods can be carried. When wheels were invented roads were needed. Before that time land travel and transportation had been carried on mostly along narrow trails just wide enough for a man or an animal. In many regions trade is still carried on over trails where pack animals are used. When steam came into use and railroads and rails were developed, it became possible to carry goods more cheaply and quickly. But railroads cannot be built everywhere. They must

Courtesy U. S. Bureau of Foreign and Domestic Commerce

FIG. 48. **Where caravan route and railroad meet.** Here in Asia Minor there are few railroads. Goods are still brought long distances to the nearest railroad on the backs of camels, just as they have been for many centuries.

Is there anything in the picture to show that it may be difficult to build railroads in this region? What articles in your grocery store may have come over such a route?

Courtesy U. S. Bureau of Foreign and Domestic Commerce

FIG. 49. **An air view of Waalhaven Airport, Rotterdam, Netherlands.** Planes from this field carry mail, passengers, and freight by way of Rotterdam from Amsterdam to London, and also from Amsterdam to Paris.

This line coöperates with other European air lines. It is even developing a plan for air service all the way to the Dutch East Indies. Find the Dutch East Indies on the map (Fig. 478). How far are they from Rotterdam?

Do you think airplane service will ever become as important as railroad service? Give your reasons.

Find out what kind of plane is shown on the field, and the advantages in using this kind.

follow the easiest slopes, and hence many sections of our country are still without railroads. The people living in such regions must bring in the goods they need and send out their products by more expensive and slower means.

Water and aërial routes. Over the water and through the air, transportation can be carried on in any direction. All that is needed is the vessel or airplane to hold the goods and the power to drive the engine. While vessels can go in any direction through the water, they usually follow definite routes between ports. These are the great trade routes of the world, the greatest of which are those between the ports on the two sides of the North Atlantic (Fig. 73).

How transportation lines are connected. Our whole country is so covered with a network of trade routes that any place where people live together in large numbers is connected with other places. The continent is crossed from ocean to ocean, or from east to west, by a great number of railroad lines. Other rail routes cross the country from north to south. Every large city is served by one or more of these railway routes and by shorter lines connecting it with near-by

Ewing Galloway

FIG. 50. **A great freight terminal in New York City.** This view of the west-side freight yards of the New York Central Railroad was taken from the top of a high building. All the freight cars, storage warehouses, and elevators show that vast quantities of goods are unloaded and reloaded every day. Why are the freight yards so close to the docks along the Hudson? How far do you think some of the goods handled here may have come? Do you think any of them will travel still farther?

cities and towns. Usually where these shorter railroads end, trolley lines, bus lines, and roadways extend out to still smaller towns. In turn these lines are connected by roadways or trails with remote villages, settlements, and trading posts.

Each state is rapidly building good roads so that the cities, towns, and villages may be more closely connected and may more easily carry on business with one another. The better its trade-route connections, the more rapidly a city, town, or village can grow and prosper.

Trade centers for collecting and distributing goods. Each city, and indeed each village or even the country store, is a trade center for the surrounding region. They all receive products from other sections and export the products of their section. They perform the same service for a near-by section that our great ports do for the country as a whole. Larger cities serve as trade centers for a large section of the country. New York, for instance, is a trade center serving almost the entire nation (Fig. 50). A city like Chicago (Fig. 203), Indianapolis, Kansas City, or Denver is just as important in its way, for each has a large area depending upon it. The more favorably a community is located for carrying on trade, the larger it can grow and the more business it can do. We shall learn later some of the reasons why certain locations more than others encourage the growth and prosperity of cities.

23. THE BUSINESS OF THE MERCHANT

THE LESSON FORECAST

1. Why a merchant collects goods from many sources.
2. What makes it possible for us to have vegetables and fruits out of season.
3. The different occupations upon which the merchant is dependent for his goods.
4. Why merchants must work together to carry on trade successfully.
5. Need of facilities for handling goods and for storage warehouses.
6. Why transportation lines should be busy the year round.
7. Why certain products can be transported only at certain seasons.

Collecting goods from many places. The business of carrying on trade is one of the great and important occupations of the world. The business of the merchants in a large city is to bring together the products of many places, even from the far corners of the earth, so that they can be distributed to smaller places as they are needed. The sugar, tea, coffee, salt, pepper, and fruit of the breakfast table are good illustrations of how the world is drawn on for our simplest meal. Each of these products has been brought from a distance, probably in large quantities, then sold in smaller quantities as needed. In early days each family or village was largely dependent on what could be produced near home. Now the whole world is drawn upon for the imports we want and at the same time it provides a market for our exports.

Collection and distribution of perishable foods. The merchant in bringing together products from many regions and countries helps to make it possible for us to have vegetables and fruit the year round. Not many years ago the only vegetables we had in winter were those that had been grown the previous summer. Now vegetables are brought to our northern markets from the warmer southern sections of the country throughout the winter, or are raised in greenhouses, so that people may have fresh vegetables every month in the year.

How merchants help one another. Merchants buy, sell, collect, and distribute the products of the soil, the forests, the mines, the factories, and the sea—in fact, everything that people need in order to live and work. The trading carried on in a great city is the work of thousands of business firms, each one working alone, yet all really working together, for they help each other just as they help people who are not merchants.

Facilities for handling goods. The success of trading depends largely upon the ease with which it can be carried on. Every large trade center must have freight yards where goods can be easily loaded and unloaded (Fig. 50). There must be warehouses in which goods can be stored until they are sold. For perishable goods like meat, eggs, apples and other fruits there must be storage plants where these products can be kept cool, so they will not spoil before they are sold. There must also be storage places for raw materials and for the fuel needed by factories and electric power or light plants.

If the trade center is situated on the shore of a lake, river, or sea, there must be adequate docks or wharves easily reached from both land and water (Fig. 199). All these facilities and many others that help in moving goods, and in having them at hand when they are wanted, must be easily available if business is to be carried on and people furnished promptly with what they need.

Need for a continuous flow of commerce. The business of trading is a complicated one. If anything should happen to stop the continuous movement of goods and products, people might suffer greatly. A severe storm that keeps the trains from running for two days may reduce the food supply, especially that of milk, in our large cities and thus bring inconvenience and even suffering to

thousands of people. Whenever anything happens to stop ocean trade, as occurred during the World War, the whole world suffers greatly.

Reasons why there are slack seasons in transportation. Trading is a business that must be kept continually active, not only for public convenience and health, but also that the railroads, the men handling products on wharves and in the freight yards, and all others engaged in the business of trading may be kept busy all the time. A railroad line that has more freight to move than it can handle for a few months in the year and little or none at other times cannot keep its men continuously at work. And it cannot keep its cars and engines busy. Hence the road does not render the full service of which it is capable.

Courtesy Canadian Pacific Ry.

FIG. 51. **A grain elevator in western Canada.** Every small town in the great wheat-raising section of Canada has its grain elevators. Such elevators as these are the first storage stop of wheat on its long journey by rail and water to Europe. At what season are railroads in this region the busiest?

More coal is used in winter than in summer, but winter is the period of storms. It is important, therefore, to have needed supplies moved during the warm weather and stored near the places where they are to be used. Our upper Great Lakes, one of the great water routes for transporting grain, cannot be used during the winter. Hence, early in the fall, when the grain is ready for market, the railroads to the upper lake ports have all they can do to move the harvest so that it can be carried down the lakes before cold weather sets in (Figs. 51, 52, and 53). While these railroads are, therefore, very busy at one season, they are likely to have little to do at other seasons.

Courtesy Canadian National Ry.

FIG. 52. **Storage elevators at Fort William, Lake Superior.** This is a second storage stop for Canadian wheat. Some of it will be milled here. The wheat came to these elevators by rail, but freighters will carry it down the Great Lakes. Do you think the boats shown here have been loaded? Give your reasons. How far will the wheat travel before it reaches the elevator shown in Fig. 53? List the bodies of water through which it will pass. Can wheat be shipped from Fort William all the year round?

Courtesy Canadian Pacific Ry.

FIG. 53. **The largest seaport elevator in the world.** Four million bushels of grain can be stored in this elevator. It stands in Montreal where the grain brought in by lake boat and railroad is transferred to ocean steamships. It is therefore the last storage stop for Canadian wheat on its way to Europe. A bushel of wheat contains almost 1¼ cubic feet. If all the wheat this elevator can hold were piled in a bin 300 feet square, a bin the size of a city block, how deep would the pile of wheat be?

The need for storage facilities. Because products cannot be moved with equal ease at all seasons, it is necessary to have storage warehouses in the larger cities where supplies can be kept until they are needed (Fig. 53). Every factory must have more raw materials on hand than it needs for immediate use. Every power plant must have coal ahead so there will be no chance of having to close down if for any reason the railroads should not be able to deliver freight steadily.

24. OTHER USEFUL OCCUPATIONS

THE LESSON FORECAST

1. How any group of workers depends upon other groups.
2. What we mean by the professions.
3. How professional work differs from the work of business.
4. How one helps others when he helps himself.
5. How one helps himself when he helps others.
6. The necessity for group life.

The many kinds of workers. So far we have been studying what are usually called the great businesses of the world. But there are many other ways in which men and women make a living and help each other. We could not get along without newspapers and books, without the telephone, the telegraph, and the mails. The labor of the men and women who are doing work in connection with these things is most necessary. So is that of the laborers who work in the mines or on the roads, or those who help in building houses, factories, bridges, and other structures that people need. Other useful men are the bankers, the insurance men who help protect us from losses by fire or accident, the salesmen in stores, the clerks in all kinds of business offices, the trainmen, the freight handlers, and all other workers

who are helping to do the work of the world. If a certain group of workers for any reason fails to do its part, everyone suffers, just as a machine stops if even a single part of it is broken.

The work of men and women in the professions. Our success in the work we undertake depends greatly upon our bodily health and our health of mind. We all need the work of the teachers who teach us how to live in the world and to enjoy it; of the doctors who aid us in keeping in good health; of the lawyers who help us to understand and obey the laws of the land; of the health officers who help keep cities free from disease; and of the ministers and other workers who help us to lead finer and more useful lives.

Those who do these kinds of work are called professional people, for their work is really a profession rather than a business. Business deals largely with the things people use; most professions are devoted to aiding and guiding people in the work that they do.

In this group we should perhaps include the people who help amuse us, for we have already learned that recreation and play are necessary for everyone. Taking part in plays and running motion-picture houses or summer resorts are, therefore, useful occupations. With the great increase in automobile travel has come a new type of work, that of caring for travelers who wish to camp by the wayside for one or a number of days. These camp managers are as useful in their way as are the hotel keepers.

The interdependence of people. All these ways of making a living show how we help and depend upon one another. There is no business, large or small, no kind of occupation that does not help some one. While a person works to make a living for himself and his family, he never works for himself alone. He cannot be wholly independent, for his success depends on selling something to others and thereby being able to buy things that he needs. The whole world is really one great family in which each member helps the others, often without realizing that he is doing so.

The fact that so many lines of business depend upon one another is the one important reason why people are living more and more in groups, often in groups of several million people in a big city.

SOME RELATED PROBLEMS

1. What do the doctor, the lawyer, and the teacher have to sell?
2. Why is it more convenient to pay for what you want with money than with some kind of goods? Why is paying with a check even more convenient?
3. Who pays for the work done by the merchant who sells groceries?
4. What necessities of life in your own home come from some foreign country?
5. How are the surplus products of your community taken to market?
6. What important railroad is nearest your home? If you wished to go to the coast farthest away from your home, at what special point would you connect with this railroad?
7. Where are the wholesale or the large department or mail-order houses that supply your community with goods?
8. Why do people today have so many more needs than did the pioneer?
9. What are the occupations of the people upon whom the merchants of your community depend mostly for their business?
10. Name two kinds of work in your home region that require only a part of a laborer's time. Name two kinds that keep a worker busy twelve months of the year.
11. How are the surplus products of your region cared for while they are waiting to be shipped?
12. How do you in your work help others and at the same time help yourself?

HOW PEOPLE ARE BENEFITED BY GROUP LIFE

25. WHERE PEOPLE LIVE

THE LESSON FORECAST

1. The advantages of living in groups.
2. Some of the things that can be done only by working together.
3. In what way a field may be compared to a factory.
4. Why cities are the best places in which to study group life.
5. The interdependence of cities, towns, and country.

Why people live in groups. People are found in nearly every place where they can make a living. The trapper who hunts through the forests for fur-bearing animals, the prospector who searches the mountain valleys and heights for mineral wealth, and many other people may live and work alone. But most of the people of the world live in groups (Fig. 54) ranging in size from that of a small family to that of cities containing several million people.

People have found that they are happier and more satisfied when they live near one another. They not only share in the results of each other's labor, but they can divide work among the members of the group and can share the results of their labor through the exchange of products. They can cooperate in securing good roads and schools and the many other things people need in any community which add to their comfort and happiness, and insure success.

Southern Air Service

FIG. 54. **Air view of a southern mill town.** In the center of the picture may be seen the great cotton mills. Around them lie the homes of the mill workers. Do you think these houses with their large, open yards make better homes for the workers than would tenement houses? Give the reason for your answer. Does this look like a clean and well-kept town? Do you think the town would thrive if the cotton mills were closed? What evidences can you see as to the kind of power used in these mills?

How plants, animals, and man may work together. There may be coöperation of a certain kind even between plants and animals, although each works for itself. For instance, a field of grass may be as busy in its way as a city street. Many different kinds of grass and other plants may be struggling to live upon the same small piece of ground. Amid the grass stalks are many kinds of insects and small animals. In the ground are numberless worms and insects all busily working and making the soil better for the plants. The field with its many workers all contributing to the growing of a crop that is to feed man or his animals is much like a factory. And, in turn, the animals which depend upon the grass work for man, while man takes care of the animals and of the plants.

As busy, too, is a forest with its many small plants and shrubs growing under the shelter of the large trees. Indeed no factory in any large industrial city can be more interesting than a field or forest.

Interdependence of city and country. A city is really the best place to study the ways in which people work and live together. We must not, however, study only one city, for each city depends upon other cities and towns for much of its business. It is also true that all cities and towns, no matter how large or small, depend upon country regions for their food supply and much of their raw material. And the country people depend upon the cities for their manufactured goods, for their books and magazines, and for the newspapers that bring to them news from all parts of the world. People in the country also depend upon cities for the entertainment that is provided through radio programs.

26. WHAT IS A CITY

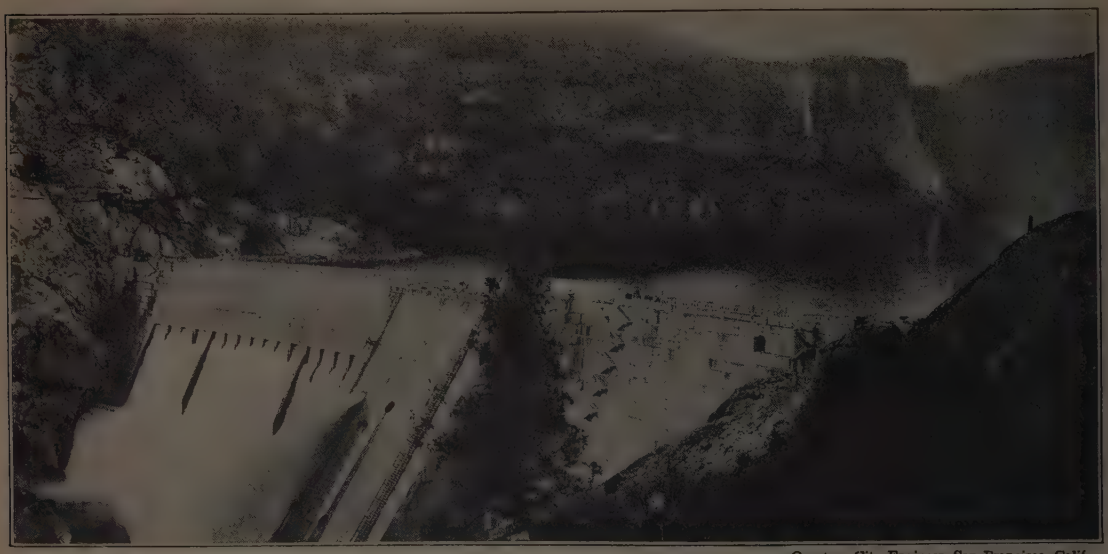
THE LESSON FORECAST

1. Conditions necessary for the growth of a city or town.
2. Importance of different sections of a city.
3. The need for convenient transportation for people and supplies.
4. The need for an abundant food supply.
5. How the needs of a growing city increase.
6. Why the problem of a water supply is important.
7. The need for apartment houses in a city.
8. Why many city workers live in suburban towns.
9. The need for rapid transit lines between a city and its suburbs.

Characteristics of a city. A city is only an enlarged town, in which live many people doing many different kinds of work in order to make a living. Any place which hopes to grow and prosper, must provide all the things necessary for its people. They need not only good and abundant food of the right kind, good water and fresh air, work and recreation, but also many other things the city must supply.

A city must be able to supply its people's needs quickly. It must have an abundant supply of good water (Fig. 55); it must have places for people to work and play; and it must have railroad and trolley lines so that people may go to and from their work easily. In many cities different kinds of work are carried on in different sections. Often there are manufacturing, trading, and banking sections as well as residence districts. In some of our larger cities one building may contain thousands of workers, most of whom live a number of miles away from their work. A large city must therefore have transportation lines that can carry many people quickly to and from their work each morning and evening. In New York City nearly a million people a day ride on trolley cars, on buses, on the elevated trains which run on tracks built high over the streets, and in the subways under the streets.

The need for transportation of different kinds. Not only must people have means to get about in a city, but enormous quantities of freight must also be moved in and



Courtesy City Engineer, San Francisco, Calif.

FIG. 55. **A view of part of San Francisco's water supply.** This is the great Hetch Hetchy Reservoir in the Sierra Nevadas where the water of the Tuolumne River is stored. From this reservoir the water is to be carried almost entirely across the state of California to San Francisco by an aqueduct and by a tunnel running under the Coast Range. Power plants along the way will utilize the fall of the water to generate electricity. What materials do you think were used in constructing this enormous dam?

out daily (Fig. 124). Factories and warehouses are usually so located that freight may be received and delivered in carload lots. But the stores that furnish food, clothing, and other goods usually must be near where people live and work. This means that every day goods must be taken from the freight yards, docks, and warehouses to the stores and markets. For instance, in New York City there are nearly 40,000 stores that sell food, much of which must be brought in fresh daily. Since most of these supplies have to be carried in wagons or trucks, the streets of a city are crowded, bustling places.

Supplying a city with food. If all the food used in New York in a year were brought in over the railroads, it would take more than 3,600 trains, each having 40 freight cars loaded with 30 tons of food, to carry it. To supply the daily demand for food there would have to be 10 such trains each day. Two of the trains would be loaded with just the milk and butter needed.

Distributing the necessities. In a great city there must be many large freight yards in which goods may be quickly and easily unloaded (Fig. 50). To save both time and expense, machinery is used more and more for such work, for often freight comes packed in huge boxes that are difficult to handle. These boxes must be lifted and loaded upon trucks and hauled to places where their contents are needed. Thus a freight yard is a busy place, with trains coming in and going out and freight being constantly loaded and unloaded. All this activity is a part of the great task of carrying on the trade of the country.

The water supply of a great city. One of the greatest needs of a large city, and one that is often hard to supply, is water. Every house and building where people live or work must at all times be supplied with an abundance of water. Water must often be brought from long distances, perhaps for a hundred miles or more. Sometimes a big dam is built and a large lake or reservoir made in which water is stored and then carried through pipes to the places where it is needed (Fig. 55). Some cities draw

Southern Air Service

FIG. 56. **An airplane view of Winston-Salem.** This North Carolina city is one of the largest tobacco-manufacturing centers in the world. Do you see here any buildings that might be factories? Why are many windows and skylights desirable in large factories? Around the business district you can see homes with yards and trees. Can you find any apartment houses? Consult the population table, Appendix. Do you think there is as great need for apartment houses here as in Chicago or New York City?

water from near-by lakes and some from streams whose sources are far distant mountains. Often the water in a large river is used, all impure matter being removed from the water before it is pumped into buildings.

How people live in a city. The land near the business center of any large city is very valuable, and usually is occupied by buildings many stories high in which business is carried on (Fig. 56). As one travels away from the business center, land becomes less valuable and is used, as we might say, less intensively. But in large cities so many people must be taken care of that there is little space to be had for single houses. Often the dwellings are many stories high, and one building may provide homes for as many families as are found in a small village. Anyone who wishes a home with ground around it, where grass can grow and children play, must go to the outskirts of the city or to a suburban town. Nearly every city has suburbs which are really a part of it, for they contain the homes of many of the people who go to work in the city every day. These outlying regions are so important that every large city must be connected with its suburban areas by good transportation lines that can carry many people, especially during the morning and evening rush hours.

27. WHERE CITIES ARE LOCATED

THE LESSON FORECAST

1. Why transportation routes affect the location of cities.
2. Why our largest cities are ports or railroad centers.
3. Why towns and cities grow up around the ends of lake routes.
4. Why cities grow up at the junctions of streams and valleys.
5. How waterfalls favor the location and growth of cities.
6. Why settlements were located at the head of navigation.

7. Advantages of an early start in industry.
8. The location of cities at the crossing of trade routes.
9. Gateways as sites for cities.
10. How resort cities and mining cities spring up.
11. Influence of political factors upon the location of cities.

Selecting a site for a city. Cities do not grow up and thrive just anywhere. Any place easily reached by natural travel routes is a favorable site for a city if it lies in a region where people naturally wish to locate in order to make a living. Our largest cities are ports or railway centers, or both. The larger the port the more business it attracts and therefore the more necessary are good rail connections. For instance, New York on our Atlantic coast and San Francisco on our Pacific coast, because of their splendid harbors and connecting land routes, naturally became great cities (Fig. 89).

Cities situated at the ends of lake routes. We usually find cities at the upper and lower ends of lake routes. Duluth, Minn., for instance, is located at the upper end of the Great Lakes route, while Buffalo, N. Y., lies at the lower end (Fig. 89). Goods are brought to these ports and distributed from them by railways. What is true of large lakes, which are great trade routes, is also true in a less degree of smaller lakes that can be used only by small boats. Usually there is a trading port or village at each end of such a water route.

Cities at junctions of streams and valleys. Another location that favors the growth of a city is the junction of streams. This is because most valleys are trade routes by water, road, or railroad. Pittsburgh, Pa., for example, at the junction of the Allegheny and the Monongahela, the head streams of the Ohio, is a fine illustration of a city so located (Fig. 57). The junction of streams, like a street corner, is a favorable spot for carrying on trade because it can be easily reached from several directions.

Cities situated at waterfalls. In the early days of our country settlements were often made on a stream where there were falls which furnished power for the mills needed for grinding grain. Many of these early settlements so located have grown into large cities. Good examples are the large cotton-milling cities of New Bedford, Fall River, and Lowell in New England, Minneapolis situated at St. Anthony Falls on the Mississippi (Fig. 198), and Louisville at the falls in the lower Ohio.

Cities situated at breaks in transportation. Waterfalls in large rivers, however, are not always an advantage. They prevent boats from passing up or down the waterway, and cargoes therefore must be changed from one boat to another, or some other way must be provided for carrying them. Every time freight has to be handled the cost increases. This, of course, means an added expense for those who buy the goods.

Canals have been built around the falls and rapids in our most important lake and river routes where otherwise boats would be forced to end their journey. The busiest canal in the world is the one around the rapids in St. Marys River between Lake Superior and Lake Huron (Figs. 89 and 207), through which pass great quantities of grain, lumber, and iron ores on their way to the lower lake ports.

Cities situated at the head of navigation. There are falls in many of the streams along our eastern coast. Ocean vessels can sail up to the falls, which we say, therefore, are the head of ocean navigation. Early settlers sailed inland as far as they could and often made their settlements at these falls. Richmond, Va., and Baltimore, Md., so located, have become large cities because of the falls which aided in their growth. Many rivers are navigable for long distances

Aero Service Corporation

FIG. 57. **A section of Pittsburgh seen from the air.** Here on the Ohio at the junction of the Allegheny and Monongahela has grown up the industrial city of Pittsburgh. How has its location aided in its development? Find on the map other cities located at the junction of two streams. On the tip of land between the rivers is the old Block House built by the British. Your history will tell you when they built it. Find the steel mills. You can recognize them by their tall chimneys and clouds of smoke.

by river boats. The head of river navigation, therefore, is a break in transportation like the head of ocean navigation, and is a highly favorable location for the growth of a city.

Importance of an early start in the growth of a city. Cities that owed their original location to rapids or to their position at the head of navigation sometimes prospered for other reasons as well. But conditions that were important in the early days of our history are often not so important today. A town or city well located in early days, however, had the advantage of an early start in business, and thus the tendency was for it to keep on growing.

Why some early ports became manufacturing cities. In many instances cities once important only as ports and shipping points have also become busy manufacturing centers. This is especially true of the cities located at points where through freight must be unloaded, reloaded, and then carried on at an added cost.

This explains, in part, why there are so many great steel mills in the cities about the eastern end of Lake Erie (Fig. 176). A ton of steel is much more valuable than a ton of iron ore. Steel can therefore better bear the expense of being carried overland than can the more bulky and less valuable iron ore. The manufacturing cities situated around the eastern end of this lake receive only a few kinds of raw materials, but send out many kinds of manufactured goods in all directions and to many different markets.

Cities situated where routes meet. Trade and travel routes bind the world together; so the city or town that can most easily engage in trade is also the one that grows

Chicago Aerial Survey Co.

FIG. 58. **South Chicago steel mills from the air.** These steel mills are located on the Calumet River at the southern end of Lake Michigan. Here ore boats from Lake Superior unload with the help of the cranes that look like bridges running down to the edge of the water. What products do you think are carried away from these mills by the railroads? The train yards just beyond the mills will hold 2,000 cars. What does this fact tell you about the size of these mills?

most rapidly. Hence a location where routes naturally come together is one where a city can grow and prosper. Although the city may be a small one, it may still be of great importance to the region round about it. Chicago, situated at the upper end of Lake Michigan, is an excellent example of a city that became a great railroad center because of its favorable location. All the railroads between the East and the rich regions of the North Central states must pass around the southern end of Lake Michigan. Chicago is also a lake port and manufacturing city (Figs. 58 and 203), and its remarkable growth is undoubtedly due to its many opportunities for trade by land and by water. Singapore, in the Malay Peninsula at the southeastern corner of the continent of Asia, is the natural trading center of a great water route (Figs. 458, 459, and 461).

For similar reasons we find cities located at the ends of important canals and on the opposite sides of any isthmus or strait that must be crossed by trade. Istanbul (Constantinople) lies at the crossroads of old land routes from Europe to Asia and also upon the water route to the Black Sea (Figs. 367 and 389). Colon and Panama lie one at the Atlantic end and the other at the Pacific end of the Panama Canal, while

Detroit, Mich., and Windsor, Ont., are on opposite sides of the strait on Detroit River (Fig. 176).

Gateway cities. Another group consists of cities known as gateway cities because they are located at natural openings to large regions. Pueblo, Colo., is the gateway city for the Colorado mountain district and the passes over the mountains to the west. Harpers Ferry, Va., is a gateway city to the central Appalachians.

Many other gateway cities have grown up because of their favorable locations on routes followed by railroads across a sparsely settled region. Fargo and Grand Forks, N. Dak., are gateway cities to the Great Plains beyond.

Resort and mining cities. Cities have also grown up at seashore or mountain resorts which people visit for their health or pleasure. Atlantic City, N. J., Saratoga, N. Y., Miami, Fla., and Glenwood Springs, Colo., are good examples of such cities. Another group of cities that must be considered is that of the mining towns. Our country contains many such towns which have become flourishing cities. Among these are Scranton, Pa., and Hibbing and Virginia, Minn.

Cities which owe their growth to politics. In a group by themselves are the political capitals of states and nations, the situations of which often were determined by politics or because a site centrally located was desired.

When the city of Washington, D. C., was laid out, it was near the geographic center of our country, but now, of course, it is far from the center (Fig. 89). Madrid, Spain, is a good example of a political capital situated far from the more densely populated sections of its country (Fig. 315).

Interdependence of cities, towns, and the country. While cities and towns, of course, are found at many other locations than the ones we have discussed, yet these are by far the most important. From a map which shows surface features and trade routes one can often determine why many cities grew up where they did.

Each city is a trade center for the smaller towns about it, just as each town and village is a trade center for the neighboring country region. Through these trade centers pass the surplus products of the region which they serve and the supplies needed as well. It is so common for people to think of trade as consisting only of exports that it is well for us to remember that imports are just as important. No community could get along if it could not import the things its people need but cannot themselves supply.

SOME RELATED PROBLEMS

1. What were some of the conveniences Robinson Crusoe lacked on his desert island?
2. Give an example of how different groups of people in your town are helping one another.
3. Go to any field in your neighborhood and see how many different kinds of plants are sharing one square yard of ground. Why can these plants not all thrive equally well?
4. Why is it necessary for a farmer to care for his crops while they are growing?
5. How is the water supply for your city or town secured and how is the water distributed?
6. Select the five largest cities in your state and find out the main reasons for their location and growth.
7. Which reason given for the location and growth of a city applies to your home town or city?
8. On a map of the United States find five cities that are located at the junction of valleys.
9. On a railway map find five cities that appear to be good railroad centers. Can you explain why?
10. Which reasons given for the location and growth of cities do you think apply to St. Louis, Baltimore, Atlanta, New Orleans, Vienna, and Paris?

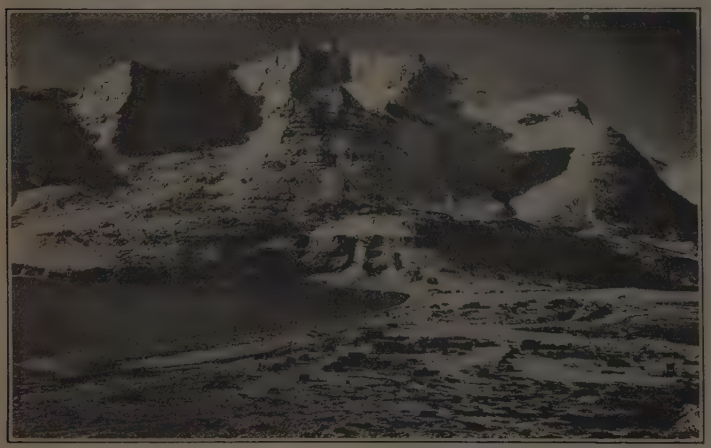
HOW MAN DEPENDS UPON PLANTS

28. THE LAND AS THE HOME OF MAN

THE LESSON FORECAST

1. Why some areas are more densely populated than others.
2. The causes for a sparse population.
3. The population in dry and in wet regions.

Why people do not live in all parts of the world. We have already learned that man is dependent upon the land for most of the things he needs, and we have also learned something of the many ways in which he makes a living from the earth. With the exception of a few places where men live in boats on the water, the land is the home of man. Not all the land is used, for there are large sections where no one lives and about which we know very little (Figs. 59 and 83). That is because the conditions there are not favorable for making a living. In other sections the conditions for making a living are so favorable that more and more people



Official photograph, U. S. Army Air Service

FIG. 60. **A fishing village on Alaska Peninsula.** This tiny village lies just across the strait from Kodiak Island. Near it are great salmon-fishing grounds, while herring and cod are also plentiful (Figs. 79 and 243). Back of the mountains caribou and other game animals are found.

Find out how long the summers are in this region. Do you think any plant life flourishes here that might provide other food for the people? If the fishing grounds were to fail, what would probably happen to the people of this village?

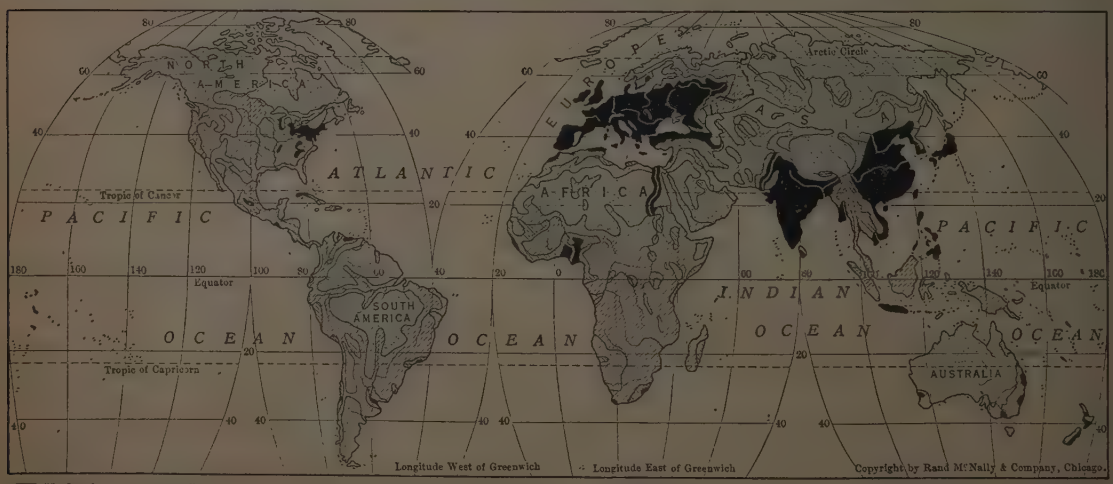


FIG. 59. **Distribution of the population of the world.** In which continents are found the largest areas of dense population? the largest areas of scanty population? Is there any relation between rainfall and density of population? How do you account for the black area in North America? Why are there so few people in northern North America? in northern Eurasia?

Courtesy Norwegian Government Railways Travel Bureau

FIG. 61. **Farming on the side of a mountain in Norway.** Do you think that the crops raised on a farm such as this are sent to market or used at home? Give the reasons for your opinion.

Could farm machinery be used on this slope? Is the soil on a hillside like this usually deep and fertile? Do you think there is any danger of snowslides on this mountain side in winter? In what ways are the forests on the slope an advantage to the farmer?

If you have ever seen any steep slopes like the ones shown here, tell how they were used.

crowd in while perhaps only a short distance away there may be much unoccupied land.

The distribution of the population of the world is not due to any one cause. There may be many reasons why a certain section is a good place in which to live.

Causes for a sparse population. Some parts of the world may be thinly populated, not because there is a great lack of natural resources such as coal, or iron, or water power, but because of other conditions. It may be that the soil of a section is too poor, or the climate too severe, or possibly too wet or too dry. Perhaps the land surface is too rough to permit many people to make a living from it. But we must remember that, although some sections are unsuitable in climate and resources for those races which lead in industry and commerce, still some people may be trying to make a living there (Figs. 60 and 61). Look at the distribution of population on the population map of the world (Fig. 59) and find out where the thinly peopled regions are.

Two contrasted climatic areas. In portions of the hot, wet tropics we find primitive people, some of whom, although using only the simplest of homemade tools, are getting much of their living from the wild plants.

In great arid regions we find many tribes wandering with their flocks from pasture to pasture, obtaining most of their food and clothing from their animals. These peoples and many others are making a living amid conditions that would seem most unfavorable to us. Few, if any, of their products are shipped out and sold, and so we give little thought to them. We are naturally most interested in the nations and peoples with whom our country trades, and who therefore are the most important to us.

29. PLANTS OF THE TEMPERATE REGIONS

THE LESSON FORECAST

1. How the natural vegetation of a region indicates its usefulness to man.
2. The difference between the crops of long-grass and short-grass regions.
3. The vegetation found in the earliest settled regions of our country.
4. The special importance of hardwood trees.
5. How pioneer homes were made in the grass countries.
6. Why the short-grass region in our country was called a desert.
7. Where most of the population of the desert lives.
8. Homes in desert regions.

Allen

FIG. 62. **Cultivating corn in the Middle West.** This field lies in the greatest corn-growing section in our country. What states are included in this corn-growing section? (Fig. 180.) The farmer is using a two-row cultivator drawn by a baby tractor to cultivate his corn.

In what different ways do you think all the corn raised in this field might be used?

Study Fig. 82 to learn what the natural vegetation of this region is. Do you think this natural vegetation helped the settlers to know what crops it would be best to raise in the region? Give the reasons for your opinion.

How natural vegetation indicates the crops that may be grown. One of the things that tells us whether a region is a good one in which to live is the kind of plants that grow there naturally. For instance, when the early settlers first went into the Central West they found the country covered with tall wild grass. This showed them that conditions there were favorable for our common food grains which are also grasses. Today this region is the great corn-growing section of our country (Fig. 62).

If, however, trees will not grow in a region and the grass is short and grows in bunches, then it is certain that few crops can be grown there unless conditions are changed. Such short grass thrives in dry areas which are not so arid as to be real deserts. These areas are called Dry Grasslands and Semi-arid Deserts (Fig. 82). They make a good grazing country, and crops can be grown if water is brought to the land; that is, if the land is irrigated.

The temperate forests and grasslands. Fortunately the first settlers in our country came to the eastern shores which they found covered with forests. In the forests were open grassy spots which provided natural building sites. The trees gave the settlers lumber for their buildings and for their ships. In some sections hardwoods, such as oak and ash, furnished excellent material for household tools and farming implements. In the open unforested spaces the grass gave pasture and winter food for the farm animals. Wild animals in great numbers roamed the forests and furnished skins and furs for clothing and flesh for food. The settlers who pushed out into this great region which extended far to the west and south could find everywhere great natural resources of vegetation.

This region is sometimes called the Temperate Forest and Grassland Area (Fig. 82). The natural vegetation found there is much like that in the old countries of western Europe from which our ancestors came. Nearly all of the region was favorable for farming and for the development of those industries that are dependent upon a favorable climate.

The Prairies. As people pushed farther west into the tall-grass or prairie country, they found very few trees. Almost all of the early houses in this section, therefore, were made of blocks of sod cut from the

Courtesy Kansas State Board of Agriculture

FIG. 63. **Threshing wheat in western Kansas.** The wheat to be threshed is hauled to the threshing machines in wide, high wagons called header barges. Why are the largest wheat farms usually found in level sections of the country?

Kansas lies in the region known as the Great Plains (Fig. 86). What occupation do you think was carried on here before agriculture? Give the reasons for your answer. Make a list of the five states which lead in the production of wheat (Fig. 183). Where are they located?

FIG. 64. **A flock of sheep in western Colorado.** Among the Rocky Mountains are many valleys and uplands which furnish pasture for both sheep and cattle. Where the pastures are small, the animals must be driven from one pasture to another. Study the picture and state how many and what kind of helpers the shepherd has.

Which do you think will thrive better on a rough, scanty pasture, sheep or cattle? Ask some one who knows to tell you whether or not your home region is a good one in which to raise sheep. Learn the reasons for his opinion.

grass-covered earth. These sod blocks were used in building houses just as we use bricks.

The Great Plains and mountain areas. Still farther west, where it is much drier, only a short grass grows. This grass does not cover all the ground, as the grass does in moister regions. Here, however, is a natural grazing land where cattle and sheep (Fig. 64) can find enough to eat by wandering from one place to another. This region, known as the Great Plains of our western states, was once entirely devoted to grazing. Now agriculture is the chief occupation here. The Prairies and the eastern Great Plains together form one of the most important grain-producing regions of the world (Fig. 63). Still farther west are mountains many of whose slopes are covered with great forests, and in the valleys are grasslands which afford good pasture for sheep (Fig. 64) and cattle.

The first people who reached the dry sections of our country found conditions so different from those in the East that they did not know how to raise food or even to find water. Not knowing that there were other regions still drier, they called this section a desert. For years the maps of the United States showed just east of the Rocky Mountains a vast area known as the Great American Desert.

Courtesy Royal Canadian Air Force

FIG. 65. **Lumber yards at The Pass (Le Pas), Manitoba.** This lumber town, which you can just see in the distance in the picture, lies near the great forests of northern Manitoba. Consult Fig. 254 to learn its location and put a dot on the vegetation map (Fig. 82) to show it.

By what means of transportation may the lumber piled here be taken to the places where it is to be used? Ask a lumber dealer in your community to tell you where his lumber comes from. Make a list of trees that grow in the region of your neighborhood. Find out if any of them could be used for lumber.

Deserts. We know now that in our country there are only a few small sections that are really desert regions where no useful vegetation grows except on land that is irrigated or watered. Even in deserts in a hot climate there is an occasional wet place or oasis where vegetation grows. Here is found most of the scattered population of the desert region. These oases are havens of refuge for all travelers, where they may find water and fruits, and where crops can be grown. Since almost no trees or grasses grow in deserts, the only natural building materials are rocks and clay. The clay for such buildings is shaped into large blocks and baked in the sun (Frontispiece).

In the interior of the temperate section of every continent there is, however, a dry, barren region. This condition is especially true of Eurasia, the largest of the continents, in which is found one of the great deserts of the world.

30. PLANT LIFE IN COLD REGIONS

THE LESSON FORECAST

1. How vegetation changes from the temperate regions toward the poles.
2. The great reserve forest regions.
3. The cold grasslands and deserts.

The great northern forests. As we go toward the poles from the temperate regions, we find the trees changing in character until finally only evergreens are seen. Today these cold regions are the world's great reserve forest areas which the lumberman has scarcely touched (Fig. 65).

The cold grasslands and tundras. Still nearer the poles the evergreens gradually disappear and the ground during the short summer is covered with grass and bushes which grow up quickly and as quickly die down. This is another natural grazing area and is known as the tundras. Beyond the "Land of Little Sticks," as this area is sometimes called, lies the region of ice and snow, a region where man cannot raise crops and must live on the fish he secures and the animals he hunts (Fig. 60).

31. PLANT LIFE IN HOT REGIONS

THE LESSON FORECAST

1. How tropical vegetation depends upon rainfall.
2. Why few people can live in either hot deserts or tropical forests.
3. Value of the tropical forests.
4. Location and probable future importance of the grasslands or savannas in hot regions.

The hot deserts and forests. In the hottest portions of the world, lying near the Equator, the vegetation varies greatly according to whether the region is generally wet or dry. The drier sections with little or no moisture are great deserts, while the very wet regions are covered with tropical forests (Figs. 400 and 401). Here few men can live because the vegetation is so dense. These tropical forests are of great value because of their woods and gums, such as rubber, which are secured from the trees.

The hot grasslands or savannas. Lying between the hottest portions of the tropics and the temperate regions are great, level, natural grasslands which furnish food to enormous numbers of wild animals. This is especially true of the continents of Africa and South America where these natural grasslands or savannas are most extensive (Figs. 285 and 400). Some day, if ever the temperate grazing lands become too small in area, because they are being turned to other uses, many of the animals needed by the people of the world for meat may be raised upon these savannas.

32. WHY OCCUPATIONS CHANGE IN A GIVEN REGION

THE LESSON FORECAST

1. How occupations change in a region.
2. Why an agricultural section sometimes becomes a manufacturing one.
3. Why residential districts in cities give way to business blocks.
4. How a city grows.
5. The most densely and the most thinly populated regions of the world.

Changes in kinds of occupations. The leading industrial and commercial nations of both America and Europe are found in the temperate regions. In each of these continents the population is increasing steadily, especially in those sections that are most favorable for industries. As cities grow and their industries expand, more and more people must be crowded into small areas. The land is used more intensively and therefore becomes more valuable. In such areas occupations like dairying and grain growing, which require much land, give way to occupations in which the land may be used more intensively.

Why in some places manufacturing replaces agriculture. Grazing and lumbering use the land less intensively than does agriculture. Hence as a country becomes settled, agriculture drives out these industries and in turn it gives way to manufacturing which uses the land still more intensively. Manufacturing may in turn give way to great buildings given over to business.

How a city grows. In those sections of a city best fitted for industry and commerce other occupations are gradually driven out. In almost any large city one can see this struggle going on between various occupations. What was farming land around the city a few years ago may now be devoted to truck gardening, or the raising of vegetables. As a city expands, the demand for factory and home sites becomes greater, and then the truck gardens are crowded out. Perhaps in the course of time the small factories give way to large industrial plants. Then the one-family houses that were near the factories are replaced by great tenement houses which furnish homes for many families. This series of changes sometimes takes place in a few years. So rapidly do cities grow at times that what one day is almost vacant land may within a few months be densely occupied.

The most densely populated regions. In every vegetation region where people find it worth while to settle in large numbers, different occupations compete for the land. The occupation that can use it most intensively finally wins out. As cities grow, the land becomes so covered by buildings that there is no room for trees, grass, or crops. Food and other necessities must come

Courtesy Royal Canadian Air Force

FIG. 66. **A fur-trading post near Hudson Bay.** This airplane view of York Factory shows the clearing in which stand the stores, warehouses, and workshops of the post. Around this clearing as far as the eye can reach stretches the scrub forest.

Why should there be stores in this lonely trading post? Do you think any other occupations besides hunting and trapping have ever been carried on here? In your opinion will hunting and trapping soon give way to other occupations? Give reasons for your answer.

from places farther away, where land is still devoted to occupations that require large areas for their work. Accordingly the larger a city becomes, the more dependent it is upon outlying sections, which in turn become dependent upon those still farther out.

The temperate forest regions and grasslands and the warmer grass and forest regions which border them are today the most densely populated portions of the world. All the great industrial nations of both Europe and America live in the Temperate Forest and Grassland Area. More than three-quarters of the people of the world live in these regions of Asia, Europe, and America (Fig. 59).

How occupations may change in thinly populated regions. The tropical forests and the dry and cold deserts are all thinly populated. The tropical grasslands, however, could support many more people than now inhabit them. Some day these regions may become great grazing areas for domestic animals as they are now for wild animals. The temperate short-grass areas are devoted to grazing and to the raising of certain crops.

In the forest areas of the colder temperate regions few people are found. Most of these people are engaged in the fur trade (Fig. 66), for forests are natural dwelling places for fur-bearing animals. But as years go on and the forests in the more densely peopled areas are cut over and become exhausted, these colder forest areas will become an important source for lumber.

The story told by the natural-vegetation maps. The maps showing the natural vegetation of the regions of the world furnish a key to the geography of the world, for they suggest the uses man can make of the land wherever he may find himself (Figs. 82, 285, 321, 428, 481, and 494).

When there were few large cities and most people were engaged in agriculture, all the food and also all the materials for clothing were produced near the places where they were to be used, in some instances on the same farm. With the exception of coffee, tea, spices, and a few other articles, our food all came from near home; at least it all came from the same vegetation region. Now for the food we use every day we are dependent upon many vegetation regions in all parts of the world.

Thus as the world has become more occupied and as transportation has developed, all regions near and far are being bound together by trade. Forests, grasslands, dry areas, and deserts all may contribute to our comfort and convenience by furnishing articles that we use every day.

SOME RELATED PROBLEMS

1. Why are forests necessary?
2. What are the most important uses of hardwoods and softwoods?
3. Why can grass thrive in places where trees cannot?
4. Give two reasons why a field of corn should be cultivated.
5. On a trip across central United States, from east to west, what changes in vegetation would you expect to see?
6. How do plants get their food?
7. Name five wild plants of your neighborhood and tell which ones die down when winter comes.
8. Withhold water from a house plant and see how long it can go without wilting. Then give it some water and see how quickly it will revive.
9. Contrast the vegetation of your community with the natural vegetation found there by the first settlers.
10. Find some place in your community where a number of uses have been made of the same piece of land, each one more intensive than the one before.

HOW MAN MAKES USE OF THE GREAT LAND FEATURES

33. HOW MAN USES PLAINS

THE LESSON FORECAST

1. Why most of the people in the world live on plains.
2. Climatic conditions on plains.
3. The use that may be made of rivers that flow through plains.
4. The uniformity of plains and the effect upon human life.
5. The various natural products of plains.
6. Importance of plains that are easily reached from the ocean.
7. Plains that are unfavorably situated for man's occupancy.

The importance of plains. Most of the people in the world live on plains where both climate and vegetation are favorable. The slopes in plains are more or less gentle, and the area therefore that can be used and developed is usually large. From these facts we conclude that of all the great land features plains have been most easily occupied and most important to man. And we find that this is also true whether we study about what man is doing today or about what he has done in the past.

Why plains are easily developed. On the gentle slopes of large plains both roads and railroads can be built easily in almost any direction. Often they can run for miles without a curve. This makes it possible for trains to attain great speed.

For the location of towns and cities, one place upon a plain is nearly as good as another, and they are, therefore, quite often located at the junction of railways or at crossroads. Almost everywhere in the plains area water is found at about the same depth, and furnishes a sufficient supply for crops and domestic use. Since there are few steep slopes to drain it away quickly, the rain, as it falls, soaks readily into the ground. Thus much of it is held in the soil for the use of the growing plants, an important factor in the grain-raising Central Lowland of our country. Usually the soil of plains is much the same over large areas, and thus the same crops may be raised everywhere.

The climate and rivers of the plains. The climate of the plains varies but little between places unless they are far apart. Winds blow with equal ease from any direction and, as there is nothing to stop them, they often blow very hard, carrying cold or warmth rapidly across great areas. Since windmills can be built so as to catch any wind that blows, they can be used there for pumping water and for many other purposes. Rivers flowing through plains have more gentle currents than those in highland areas. Often, therefore, they afford splendid routes for travel and trade. This was an important

Courtesy Canadian National Railways

FIG. 67. **A wheat field in Alberta, Canada.** The region in which this wheat field lies is a part of the Great Central Plain of North America. What are the advantages of raising wheat on such a plain? How many of the leading wheat states of our country are located in the Great Central Plain? (Compare Figs. 86, 89, and 183).

Why might some people find it monotonous to ride through such a region as this? Find pictures of the various machines used on the large wheat farms in areas such as the one in this picture. For what purpose is each machine used?

fact in the early history of our country, as the story of the development of the middle western states clearly shows.

The uniform appearance of the plains. Since plains are so nearly uniform in all their conditions, the natural vegetation and the cultivated crops are usually the same over large areas. Upon some of the large plains of our middle western states one may travel for hours and hours seeing nothing upon either side but great fields of corn or wheat (Figs. 179 and 182). There is almost no variety in such a landscape. As far as the eye can see, the colors are the same—green when crops first spring up, yellow and brown as the harvest time approaches, and gray and brown in the coldest months.

Mineral deposits in plains. The mineral deposits found in plains are not so varied as are those of mountains, yet they are often of great value. The nearly level unbroken rocks underlying many plains form the best strata for holding in oil and gas, both valuable plains products. In many plains sections coal is found buried in the underlying rocks (Fig. 84).

How the location of plains determines the use made of them. The great plains of the world either touch the oceans or are easily reached from them. Those plains located where the climate is favorable have become the homes of great nations, as is seen in South America, Europe, Asia, and our continent (Fig. 59).

Not all plains, however, are favorable for the uses of man. In the northern part of our continent and of Eurasia we find great plains bordering the cold Arctic Ocean. Although large enough to contain millions of people, these plains are sparsely populated because of the unfavorable climate. In Africa and South America there are also great plains that are thinly settled (Fig. 59). This is because the climate there is hot, moist, and unhealthful. But if people can learn how to overcome such unfavorable climatic conditions, these tropical plains may some day be of tremendous importance as food-producing areas for the more densely peopled temperate regions.

34. HOW MAN MAKES USE OF HIGHLAND REGIONS

THE LESSON FORECAST

1. The difficulty of travel and transportation in mountainous regions.
2. How mountains separate people from each other.
3. How temperature and vegetation vary at different altitudes in highlands.

Ewing Galloway

FIG. 68. **A highland area in southeastern Europe.** This region is a popular summer resort and is also visited because of its mineral springs. If it were not for the beauty of the scenery and the mineral springs, do you think people would cross the mountain barriers to live here? Give the reasons for your answer. Do you think people could make a living in this region from grazing or farming?

What would be the easiest route for a highway or a railroad out from this valley? From magazines and railway folders cut and mount pictures which advertise mountain resorts. Write a paragraph about each one.

4. Mountains as a source for lumber, pasturage, and minerals.
5. Why mountainous areas are thinly populated.
6. Why mountain passes are important natural features.
7. Why plateaus are usually thinly populated.

Mountains as a natural barrier. Plains situated in healthful climatic regions attract men because they offer many favorable conditions for living. Highlands do not invite occupation, and only under special conditions can their valuable resources be used by man (Fig. 68).

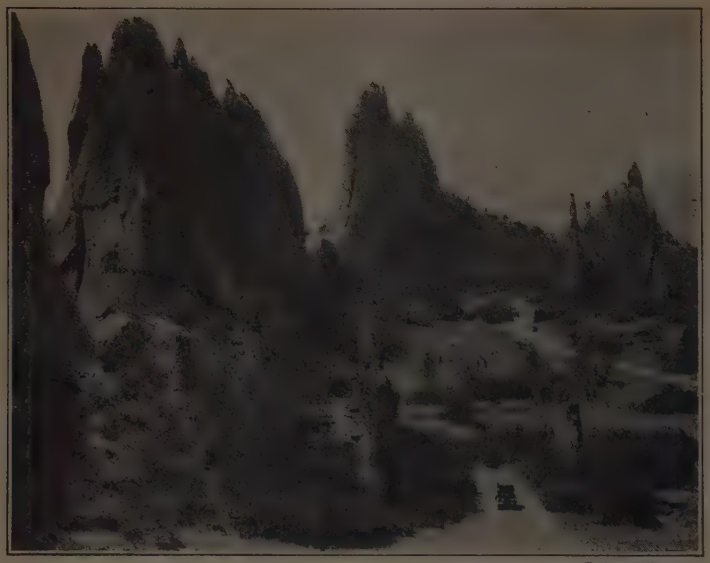
The great mountain highlands, rising thousands of feet and full of steep and almost insurmountable slopes, make traveling from one side to the other most difficult. Such mountain walls may border plains and keep people from entering the country. For example, the Appalachians, bordering our Atlantic plains, kept the early colonists close to the seashore. This barrier (Fig. 129), however, made for strength because it kept the small population from becoming too scattered. Even today the great Appalachian Highland, although crossed by many railroads, is somewhat of a barrier to travel and to the movement of freight between the eastern and central portions of our country.

Some mountain barriers such as those of the Andes and Himalayas are so high and so nearly impassable that they are barriers which completely separate the people living on the opposite sides.

How highlands affect climate and vegetation. As one travels up through highlands the climate becomes colder and colder, and the vegetation changes rapidly. Here even in the tropics one may find on a mountain side every type of climate and every kind of vegetation from tropical forests to perpetual snows.

Naturally a mountain mass rising out of a great plain, as do the Black Hills in the Dakotas, has a vegetation very different from the region surrounding it. The forests of the Black Hills were the one source that supplied poles for the tepees of the Indians who lived on the near-by plains.

Highlands as resorts. Near the Equator the mountains and high plateaus with their cooler temperatures attract people, especially during the hot seasons. This is also true in portions of this country, although here people are drawn to the mountains as



Ewing Galloway

FIG. 69. **In the Garden of the Gods, Colorado.** This region, lying near Pikes Peak, is a widely known scenic resort. The huge rock masses, a bright brick red in color, have been weathered into strange shapes. In what great mountain system is this region located?

What do you think is the chief occupation of the people who live near this region? Explain why you think so. Why have such good roads been built through this rugged country?

See if you can find a place in your neighborhood where the wind or rain or running water has carved out of the surface tiny peaks similar to the giant ones that are shown in the picture.

much by the beauty of the scenery as by the favorable summer climate (Fig. 69).

Forest and mineral resources. In many sections highlands furnish lumber and summer pasturage. But mountains are of most value to man because of the rich minerals they contain. This is true especially of gold and silver—the precious metals, as we call them—which can be reached only in rocks that have been lifted up into mountains.

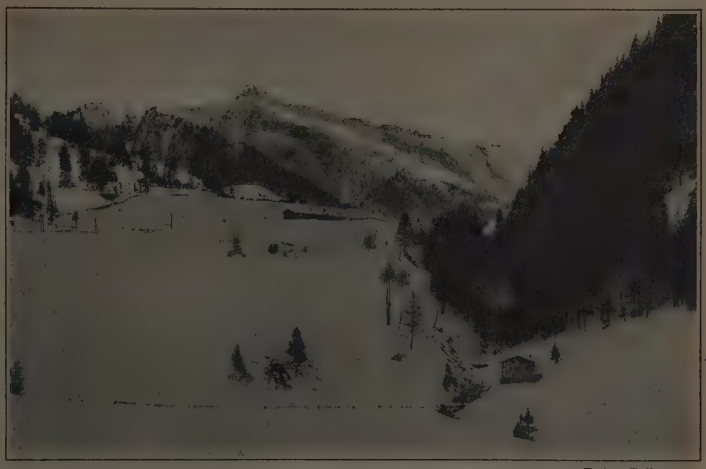
We find many mining towns in the high mountains where living conditions are hard, but where the resources are so valuable that it pays to secure them even at the expense of great labor and in the face of many dangers. Mountain regions, however, are thinly populated, and only in sections where natural conditions are favorable do we find cities. None of these is as large as are some cities of the plains and coast areas.

Mountain passes. The most important parts of a mountain barrier are not the high points but the low points, or passes. If the barrier must be crossed, roads naturally lead to the lowest pass in the mountain wall. Often such a pass may be known by its name the world over because it is on a much used travel route, while the names of the near-by peaks that border the pass (Fig. 70) may be known only to a few.

Plateaus. Highlands with more or less flat surfaces, which we call plateaus, are not so difficult to cross as are mountains, with their numerous steep slopes and zigzag valleys. A plateau may have great extent of area, and once the top is reached, travel is reasonably easy in all directions. But the steep slope found on at least one side of a plateau quite often makes it almost impossible to reach the top. It is, however, the height of the great plateaus of the world which makes them unfavorable for man's occupation, for the high altitude often means a cold and perhaps dry climate.

The great plateaus of Asia, however, are, and always have been, grazing regions in which herdsmen lead their flocks from pasture to pasture. Grazing, of course, can be carried on only in a country that is thinly populated. In our country, especially in the western part, are several plateaus all thinly peopled (Fig. 59).

Isolation of people in highlands. In all highland regions the people are more or less



Ewing Galloway

FIG. 70. **Brenner Pass in the Alps in winter.** This famous pass between Italy and the Austrian Tyrol, although the lowest one through the Alps, is over 4,500 feet high. It has been called the "Gate to Italy." Why do you think Italy needs a gateway at the north? Consult Fig. 367.

From earliest times Brenner Pass has been used. In the Middle Ages it was a great highway of trade and travel. Now a railroad runs through the pass. Do you think that difficulties were encountered in building this railroad? Explain the reasons for your answer.

isolated. Traveling from one town or village to another is often difficult because of the steep slopes or the great distances. People thus cut off from others cannot carry on trade, nor can they meet to exchange ideas or for a good time. So the people of one village may have customs and ways of speaking and thinking that are very different from those of people living in neighboring villages. On plains new ideas travel rapidly from one group to another, while in highland regions, where people are cut off from each other new ideas travel slowly.

There are always sharp contrasts between highlands and plains. Of course, there are exceptions, but generally highlands impede the progress of man while plains furnish conditions that are favorable to his progress and development.

Highlands and rainfall. Even though the highlands contain few inhabitants, they are often of great use. One season's rain and snow on a highland may provide another season's water supply for the people of the near-by lowlands. The people of the fruit region of southern California, seeing a heavy covering of snow on the mountains to the east, know there will be an ample supply of water for irrigation and for power the following summer.

35. MAN AND THE RIVER VALLEYS

THE LESSON FORECAST

1. The use of valleys as highways for trade and travel.
2. Why rivers are not good boundaries between countries and states.
3. Why a river is often better known than are the nations that occupy its valley.

Why river valleys are centers of life. The most interesting parts of any land area are the river valleys, for here most of the people of the world live and work. We have seen how the oldest nations of the world developed in certain rich river valleys of Asia and Africa, where conditions for making a living were favorable. River valleys, because they contain the most level land and the easiest grades, are where we find many farms and cities and roads and railroads.

Rivers as routes of travel. Rivers have cut ways for themselves through the surface of the land and thus furnish the easiest routes to follow in travel. The first people who went to the west from the Atlantic states journeyed up the river valleys until they could pass over the highlands and reach streams flowing to the west. Then, either by boat or by following trails made by Indians or explorers, they kept on their way

into the unknown country. Often when they found favorable places along the streams the people started tiny settlements, many of which have become the great cities of today.

Wm. H. Baker

FIG. 71. **The Chesapeake and Ohio Canal at Harpers Ferry, W. Va.** This, one of the earliest canals in the country, planned to unite the headwaters of the Ohio and the Potomac and thus form a waterway from the ocean through the Alleghenies, was built only to Cumberland, Md. How did the finding of coal near Cumberland and the building of a railroad through the valley affect the canal?

What is true in this country is true everywhere. In all countries the river valleys are the homes of most people.

Important railroads now follow the routes marked out by early explorers and settlers, and thus many river valleys have become great arteries of trade that bind together in business all the regions of the country.

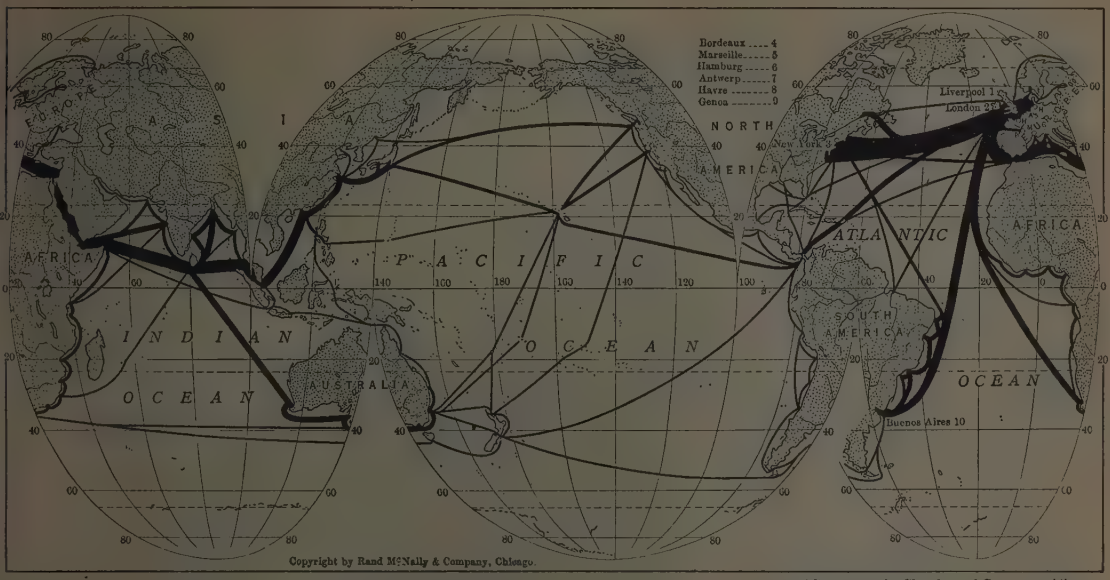
River trade and travel. Today we do not use the rivers as generally as we did in earlier days, because we travel and carry goods more by railway along the valley routes than we do by river boats. But in some countries, especially those of Europe, the rivers are still the trade routes that are most used. In many instances canals have been built to connect one river with another, so that goods may be carried for long distances into the country without being reloaded (Figs. 71, 72, 352, and 373).

River valleys as areas of common human interest. In almost every river valley the people are bound together by common interests because they live under similar conditions and do business with one another. Although a river may be a definite boundary for a town, a state, or a nation, it is not a boundary that keeps people out. It is a flowing road that all may use, and thus it binds people together. A city street or

Courtesy Swedish State Railways

FIG. 72. **The Göta Canal, Sweden.** This is a scene on the great water highway known as the Göta Canal which connects the city of Stockholm with Göteborg. Find these cities on the map, Fig. 367. In what ways do you think this waterway aids trade and travel throughout this region?

The canal forms only about one-third of the waterway, which is 347 miles long. Can you explain why it was necessary to build as many as 65 locks in this short distance? Is this waterway available for traffic all the year round?



After a map in *Chambers of Commerce Atlas*

FIG. 73. **The chief commerce routes of the world.** The ten leading seaports of the world are numbered according to rank. Four of them are located on the map. The others are listed in the open space at the top of the map and their location on the map is shown by a small initial. Between what two continents is there the most commerce? What continent carries on the most trade with Africa? with South America? with Asia? with Australia? Across which ocean does the heaviest traffic pass?

country road may bound the lots or farms on either side, but the street or road is used by all the people livng along it. A road invites people to use it in their work and to travel over it. Nations have often struggled to get possession of both banks of an important river, but if all countries share in the use of a river usually there is peace, and prosperity is surer.

Why some rivers are well known. Sometimes we know much more about a river valley itself than we do about the nations within it. Almost everyone, for instance, knows something about the Nile but very little about the people who live in its great, long valley. We often think of the Yukon without thinking of Alaska, or of the Amazon without thinking of Brazil. But most river valleys are, to many of us, something more then just physical features of the earth's surface. They are great centers of population of interest to us because of their association with people and with what they are doing.

36. MAN'S USE OF THE SEASHORE

THE LESSON FORECAST

1. Why the ocean is a great highway for travel and trade.
2. Why every nation wants some land bordering the sea.
3. What conditions make a good harbor.
4. Why a nation needs good harbors and why great cities grow up on good harbors.
5. The great harbors of our country.
6. Harbors and their importance to the fishing industry.
7. Why harbors are sometimes built by man.

The ocean as a great free highway. At the edges of the continents the land meets the ocean, the world's great highway (Fig. 73). Travel over the ocean is much like travel through the air, for it does not depend on any track or road. On land, travel and trade can be carried on only along certain definite tracks or roads. One cannot always go easily in any direction one wishes. It costs money to build roadways and railroads and

Ewing Galloway

FIG. 74. **Docks and wharves at Amsterdam, the Netherlands.** Consult Fig. 367 for Amsterdam. Only a few of the docks and wharves of this great port are seen in this airplane view. The ships that seem to be surrounded by frames are in dry docks. Why are dry docks necessary? When Amsterdam's old harbor on the Zuider Zee silted up, a canal was built to the North Sea. All but the largest passenger ships can still reach Amsterdam by way of the North Sea Canal.

keep them in repair. A ship, however, can travel in any direction through the waters of the great oceans of the world. Today man also can travel through the air in any direction.

The ocean used to be a dreaded barrier that divided people, and across which they traveled with discomfort and many times with fear. Now it is different. The dangers of the ocean are better known. Vessels are larger and cannot so easily be beaten about by winds and waves as were the small ships in which the first people came to this country. Then, too, such modern aids to navigation as lighthouses, charts, buoys, and the radio make travel by water much less dangerous than it once was.

The ocean today is the great highway that binds people and nations together (Fig. 73). Nations are now so dependent on one another for goods and business that they all need to be able to reach the ocean easily (Fig. 74).

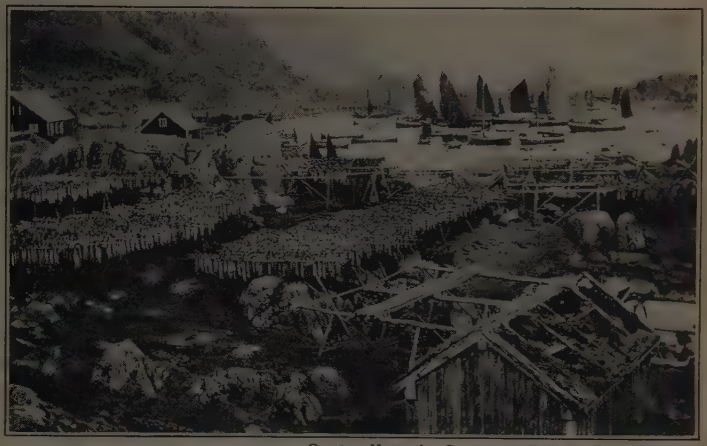
The need for harbors. Although travel over the ocean is usually safe, it is not always easy to find a safe landing place or harbor. Hence those nations which have the best harbors are the ones that are most favorably situated for carrying on business with other countries (Figs. 241, 335, and 361).

Good harbors are therefore most important on any shore line, and many of our great cities owe their growth to the harbors upon which they are built. The best harbors are

Royal Dutch Airline, from OROC

FIG. 75. **The North Sea entrance to Amsterdam.** From the town of Ymuiden, shown in this airplane view, the North Sea Canal runs almost straight across the peninsula to Amsterdam. Notice the number of channels needed to accommodate all the ships which pass through the harbor.

Do you think this is a natural harbor or an artificial one? Will it be easy to keep the harbor from silting up as did the one on the Zuider Zee at Amsterdam? Do you think there are any locks in this canal? Why are canals easily built in the Netherlands?



Courtesy Norwegian Government Railways Travel Bureau

FIG. 76. **A fishing harbor in northern Norway.** Along the coast of Norway are many small harbors like the one shown here. Most of them are fishing villages.

Notice the racks of fish drying in the sun. Do you think there are any other occupations carried on here besides those connected with fishing? Are there any reasons for thinking that the fishing grounds are near by? Notice that all the larger boats are anchored in the middle of the harbor. Can you tell why? Do you think very large ships could use this harbor?

those easily reached from the ocean and big enough to accommodate many large vessels as well as the wharves to which they can tie up. New York has become the greatest city on our eastern coast because it has the best harbor and also because it lies on the shortest and easiest routes to the interior of the country. San Francisco on the western coast also has a splendid harbor (Fig. 237). This harbor, since it is much larger than the present trade demands, will make it possible to handle easily our constantly increasing trade with the great countries of Asia and with Australia across the Pacific.

The countries where fishing thrives as an occupation are those which have many good harbors from which vessels may sail to the fishing grounds. In its early history New England ranked high in the fishing industry. This was due to its good harbors and also to its location near the fishing grounds of the North Atlantic, and its forests which furnished the best of lumber for shipbuilding. For similar reasons Norway has always been prominent in the fishing industry (Fig. 76).

Areas with poor harbor facilities. Sometimes when a country has valuable products to export and has not a good natural harbor,

Courtesy Clarence E. Jones

FIG. 77. **Ships anchored outside Mollendo, Peru.** This port lies on a steep, rocky coast where there is no harbor. All ships have to anchor out in deep water where they are loaded and unloaded.

Find Mollendo on the map of South America (Fig. 288). Find out what its exports are. Why do you think there should be a port here where there is no harbor? Can you tell why the large ships would put out to sea if a storm came up?

one is built (Fig. 75). To break the force of the waves so that vessels may anchor in safety and be protected, breakwaters are built out into the ocean. But such harbors (Fig. 238) as these are not entirely protected from the winds. They do not therefore afford as safe anchorage as a natural land-locked harbor (Fig. 239) that is surrounded by hills which break the force of the winds.

Sometimes it is impossible to build breakwaters in places where there are great opportunities for trade. Then vessels must anchor far from shore, and goods and people have to be carried ashore or brought to the vessel in smaller boats (Fig. 77). Often where high waves beat upon the shore the landing of boats is extremely dangerous, and this way of transferring goods and passengers can be used only in fair weather.

The relation of irregularities in coast line to harbors. Coast lines that are unbroken for long stretches except where rivers enter the ocean, are poor in harbors, and the development of a country with such a coast is often slow. The lack of good harbors was one reason why Africa remained so long unexplored. Bays in a shore, especially if they extend far into the land, as they do along our North Atlantic coast, provide excellent harbors. Sometimes where there are many bays close together in a shore line the land surrounding them becomes crowded with people who make their living around the harbors or upon the ocean, as is true in much of Norway.

It is the harbors of the shore line, therefore, around which our interests center, for they are the points of most value to the people and nations of the world.

SOME RELATED PROBLEMS

1. It is said that three-fourths of the people of the world live within 1,000 feet of sea level. Is your home above or below 1,000 feet in altitude? (Fig. 86.)
2. Why are there such different uses made of the plains of North America?
3. In your home region, for what purposes are the products of petroleum used?
4. Why is the water in so many mountain streams higher in summer than in winter?
5. Why are mountain streams valuable for power and irrigation?
6. Why is it good policy to allow the forests to remain on the mountains?
7. What routes do the railroads near your home follow? Do any of them follow the valleys of streams? Explain fully.
8. Why is travel on the ocean less dangerous now than it once was?
9. How would it help Iowa and Illinois if a canal that would accommodate ocean-going vessels connected the Great Lakes with the Atlantic Ocean? if one connected the Great Lakes with the Mississippi River?

PART II

REGIONAL GEOGRAPHY OF THE CONTINENTS

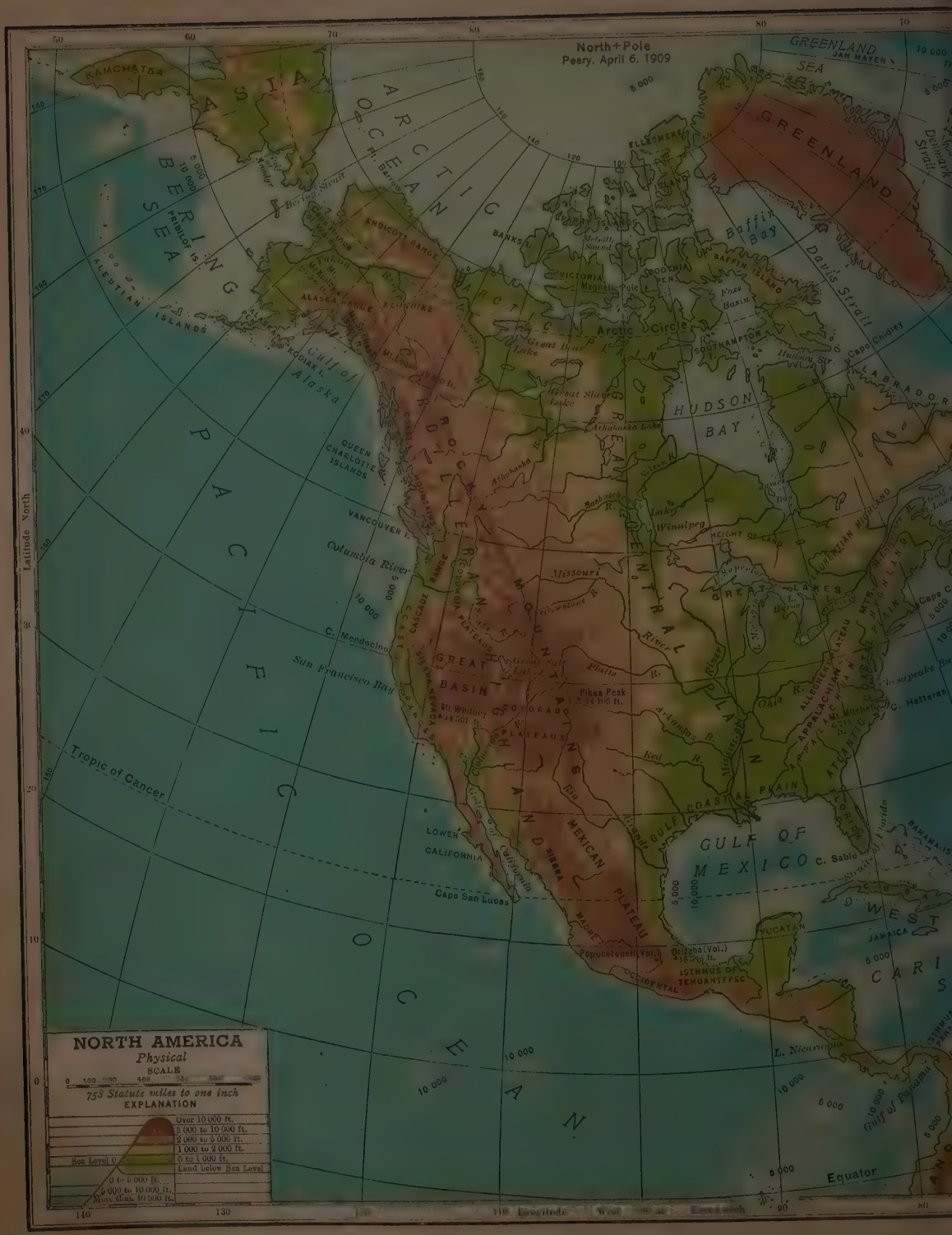
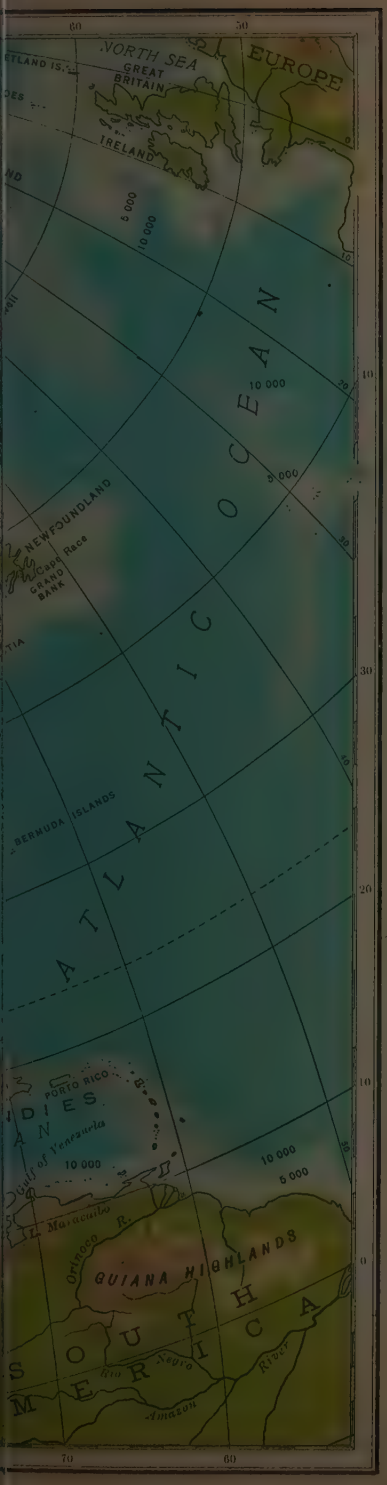


FIG. 78. A Physical Map of North America



NORTH AMERICA

OUR CONTINENT AND ITS POSSIBILITIES FOR LEADERSHIP

37. WHAT THE MAPS, TABLES, GRAPHS, AND GLOBES SHOW

Problems:

1. If you were to travel from North America to each of the other continents, from what port would you sail, at what port would you land, and what bodies of water would you cross? Use a globe or a world map and record your answers in this form:

From North America to:	Port of Embarkation	Direction	Distance	Water Bodies Crossed	Port of Landing
Europe	New York	East			
Asia					
Africa					
South America					
Australia					
Antarctica					

2. What kinds of climate did the early explorers and settlers find in different parts of North America? (*a*) What was the warmest and the coldest weather experienced by the Northmen who discovered the coast of Labrador? What did the Spanish explorers learn about the temperatures in Central America? (Appendix, Figs. 499 and 500.) (*b*) Explain the reasons for the densely populated areas in the eastern part of the continent (Figs. 83, 86, and 106). (*c*) Compare the total and seasonal distribution of rainfall in Arizona with that of Florida (Figs. 145 and 209). (*d*) How does the rainfall of Central America compare with that of Alaska? (Figs. 81 and 244.)
3. Why is the population of North America unevenly distributed? (*a*) Study the temperature, rainfall, and natural-resource maps of North America and the United States and suggest why the northern part is thinly populated. (*b*) What reasons do the physical and rainfall maps suggest for the small number of people in the western half of the continent?
4. Why should we expect to find a great variety of vegetation in North America?
5. What European countries have possessions in North America? (*a*) Make a list of them. (*b*) In what climatic areas are they?
6. If you could go by airplane directly south from Chicago, near what city of Mexico could you land? (*a*) From New York directly south, on what West Indies island could you land? (*b*) From the Canal Zone directly north, what United States city would you reach first? At what cities farther north could you land? at what city in Canada? (*c*) From Savannah directly west to the Pacific, what cities would you pass?

38. THE EFFECTS OF NORTH AMERICA'S SIZE AND POSITION

THE LESSON FORECAST

1. Why North America was settled largely by Europeans.
2. Why certain portions of the continent of North America cannot support a large population.

A continent centrally located for trade. The east coast of North America faces the Atlantic Ocean and Europe, and the west coast faces the Pacific Ocean and Asia (Fig. 78). With modern means of communication and transportation, trade is easily carried on over the Atlantic with the people of Europe. Yokohama, Japan, is about the same distance from Seattle as Roma (Rome), Italy, is from New York City; so trade with Asia is easily possible. Although our trade with Asia and Australia is important, South America provides a market much nearer at hand, and hence an effort is being made to develop trade between the Americas (Fig. 73).

The fact that North America is nearer to the continent of Europe than to Asia is one reason why it was settled by people from the older countries of northern Europe.

The advantages and the disadvantages of North America's great size. North America extends from near the North Pole almost to the Equator (Fig. 78). Great extent of territory from north to south, as we have already seen, gives a continent a variety of climates. For this reason almost any crop grown any place in the world will thrive somewhere in North America.

The interior of our continent, however, is so far from the ocean that some parts of it are very dry and cannot, therefore, support a large population. Moreover, the continent is so large that trade between interior points such as Chicago or Omaha and the eastern coastal cities involves long freight hauls (Fig. 80). Such long hauls are expensive, and hence the products cost more in the cities where they are sold than they do near the places where they are produced.

39. THE COAST LINE

THE LESSON FORECAST

1. Leading harbors of the east and west coasts.
2. Advantages of many deep bays in a coast line.
3. The fishing grounds about Newfoundland

Why the North American coast favors ocean transportation. America has a long coast line, longer in proportion to its area than that of any other continent except Europe. A long coast line is an advantage because it means there may be many indentations or inlets which furnish harbors. These inlets offer good locations for cities to be built near the sea, and when the bays are found near sections where conditions favor agriculture and industries, trade prospers and many cities spring up.

Some of the finest harbors in the world are on the east and west coasts of North America. The east coast especially abounds in harbors which range in importance from that of New York City at the mouth of the Hudson to little havens just large enough to accommodate a few small fishing vessels. The St. Lawrence makes it possible for ocean steamships to sail inland as far as Montreal (Fig. 53). Delaware and Chesapeake bays, with their long coast lines, provide fine locations for ports, of which the most important are Philadelphia, Baltimore, and Norfolk. The most important inlets on the west coast are San Francisco Bay and Puget Sound. (Figs. 239 and 241.) Besides the fine harbors which these inlets afford, there are, however, a number of smaller harbors of growing importance, as at San Pedro and Portland (Figs. 238 and 240).

The chief harbors of the eastern coast, because of the many railroads that have been built along the gentler slopes, offer easy access to the rich interior of the continent. This

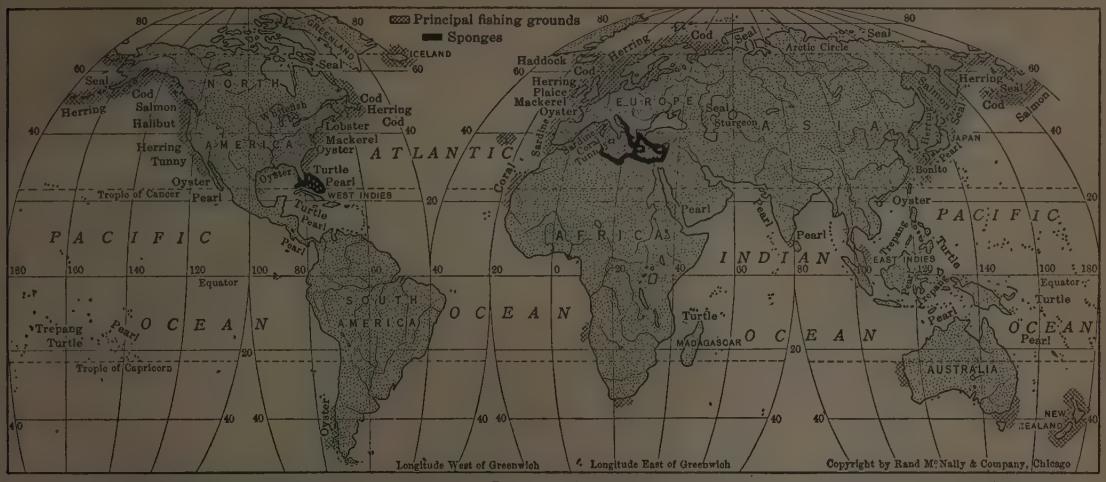


FIG. 79. **The principal fishing grounds of the world.** In what hemisphere are the principal fishing grounds found? Can you explain why the most food fishing is carried on in the cool waters of the middle latitudes? What kind of fishing prevails in the warmer latitudes? Locate the sponge, pearl, and turtle fisheries. What uses are made of these products?

rich region produces an abundance of food products, valuable minerals, and great quantities of manufactured goods.

The continental shelf and its importance. A study of the physical map of North America (Fig. 78) reveals a narrow fringe of shallow ocean bordering the continent on the east. The sea bed under this shallow water is known as the continental shelf. It is really a part of the continent which has become covered by the ocean.

Near Newfoundland the shoals formed by the shallow waters above the continental shelf are known as the Grand Bank. These shoals, which abound in valuable fish, form the chief fishing grounds of both the United States and Canada (Fig. 79).

40. LARGER SURFACE FEATURES

THE LESSON FORECAST

1. Names and locations of the larger highlands and lowlands.
2. Extent of the inland waterways of our country and their importance as trade and travel routes.

The great highlands and lowlands. The principal surface features of North America, four in number, extend in a general north-south direction (Fig. 78). The western or Cordilleran Highland near the Pacific coast extends from Alaska to Panama. The lower, less rugged and less extensive eastern or Appalachian Highland runs nearly parallel with the Atlantic coast from the Gulf of St. Lawrence into Alabama. Between these two highlands lies the Great Central Plain reaching from the Arctic Ocean to northern Mexico. The Atlantic Coastal Plain lying between the Appalachian Highland and the Atlantic Ocean extends from New York into northern Mexico. (Figs. 78 and 86.) The highlands are important for their mineral deposits and their forests, while the lowlands are usually centers of industry and agriculture.

The inland waterways. North America is fortunate in having many rivers and lakes which furnish splendid trade and travel routes (Fig. 78). There are many rivers, especially along the Atlantic coast, which extend far into the continent. The early French explorers went up the St. Lawrence, through the Great Lakes, and then down the Mississippi to the Gulf of Mexico. The Great Lakes and the St. Lawrence River form the greatest inland waterway in the

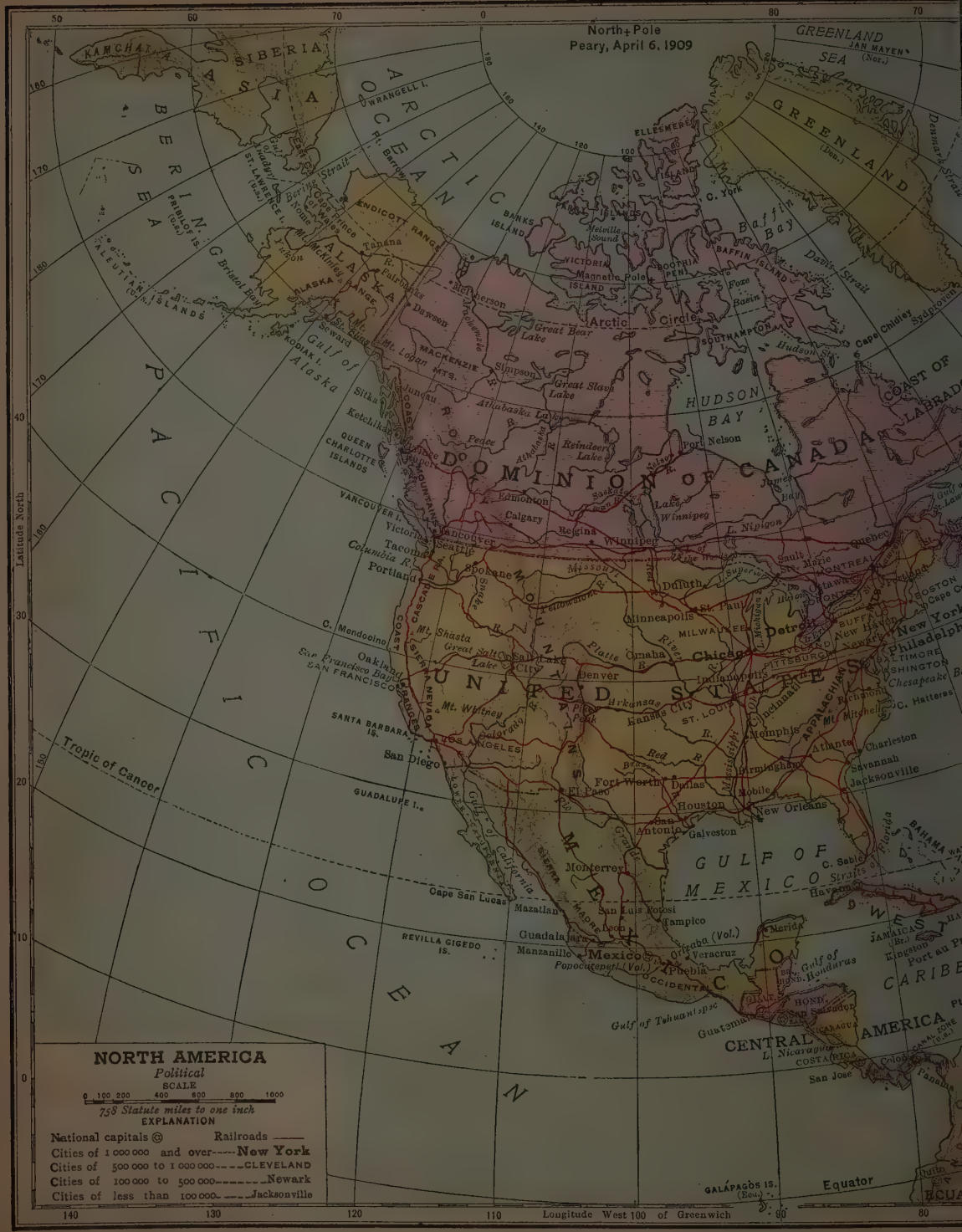


FIG. 80. A Political Map of North America

world, while the Mississippi and its many tributaries, some of which are in constant use, furnish over 9,000 miles of waterways.

The English explored the Atlantic Coastal Plain and the Appalachian Highland by sailing up the rivers, many of which permitted navigation to the inner edge of the Coastal Plain. Some of these rivers furnish easy routes through the Appalachian Highland. Of these routes the Hudson is the best. The early explorers of the great Northwest ascended the Missouri to its headwaters, crossed the narrow divide to the headwaters of the Columbia, and then followed this stream down to the Pacific.

The rivers of the western coast, as a rule, are too short and too swift to be useful as trade routes. Two great exceptions, however, are the Columbia in the United States and the Yukon in Alaska (Figs. 86 and 254). Because of the cold climate, the rivers flowing north into the Arctic Ocean and Hudson Bay are not likely to develop into important waterways.

SOME RELATED PROBLEMS

1. Why are streams that are especially valuable for power, of little use for navigation?
2. Why should we expect more important harbors on the east coast of the continent than on the west coast?
3. Why was the eastern part of North America settled by white people before the western part?
4. Select from this book ten pictures which show the kinds of occupations followed in different parts of our continent.
5. Why are inland waterways of use in exploring new regions?
6. For what important things besides power and transportation are rivers used?
7. Why was it easier for explorers to enter the interior of North America from the south rather than from the west?

41. THE DIVERSITY OF CLIMATE IN NORTH AMERICA

THE LESSON FORECAST

1. Why the continent has a variety of climates.
2. The abundant summer rain in the eastern part of the continent.
3. The importance of irrigation in the western part.
4. Reasons for the great differences in vegetation in North America.
5. Why the Temperate Belt of North America is the most desirable one in which to live.
6. Reasons for sparsely populated areas.

Why the climatic conditions of North America are varied. North America extends from the tropics northward beyond the Arctic Circle. Thus it has a great variety of climate, though the greater part of the continent has cool or cold winters and hot or warm summers. Almost every kind of crop, from hardy grains requiring only a short season to mature, to tropical products that can endure no frost, can be produced somewhere on the continent.

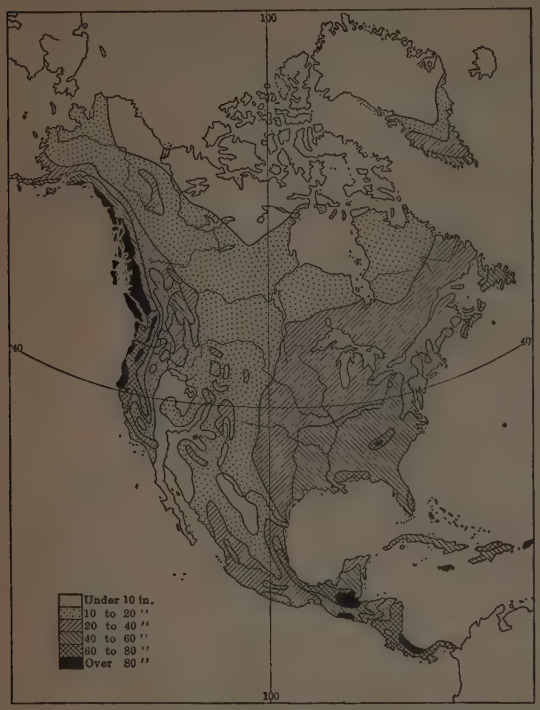


FIG. 81. **Distribution of rainfall in North America.** How does the amount of rainfall on the 40th parallel vary from the Atlantic Ocean westward to the Pacific? How does the amount of rainfall vary northward from the mouth of the Mississippi River to Hudson Bay?

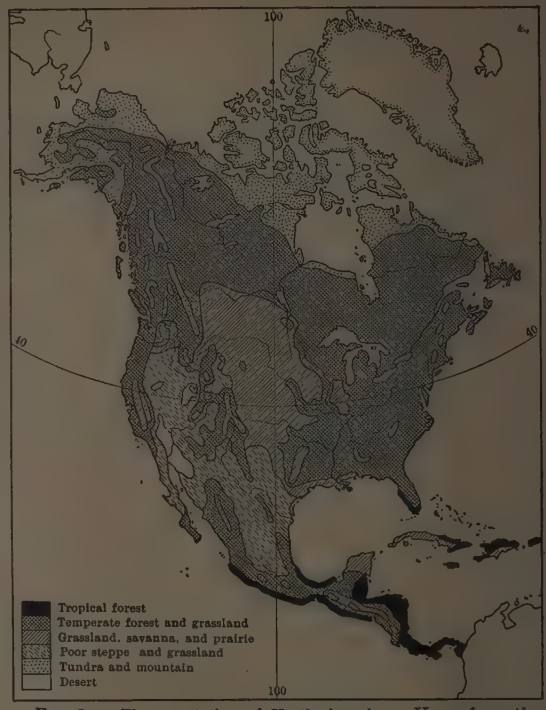


FIG. 82. **The vegetation of North America.** How does the vegetation on the 40th parallel vary westward from the Atlantic Ocean to the Pacific? What relation is there between the vegetation and rainfall? Compare Figs. 81 and 82. Where are the great grasslands of the continent?

During the growing season crops depend as much upon the rainfall as upon the temperature. The eastern half of North America has abundant rain at the time it is most needed. This rain is brought mostly by winds that blow over the warm land from the cooler Atlantic and the Gulf of Mexico (Figs. 494 and 499). In the western half of the continent, except in a few favored places, rain does not come when it is needed (Fig. 496). Hence crops can be grown only where the land is irrigated (Fig. 218) or where some special crop will thrive on the little rain that falls. This lack of rainfall is due in large part to the long, high ranges of the Cordilleran Highland which border the Pacific coast. The moisture-bearing winds from the Pacific bring rains only to the westerly sides of the mountains. By the time they reach the interior valleys of this broad highland and the region lying east of the mountains they have lost much if not all of their moisture.

The influence of climate upon vegetation. Climate is an important factor in explaining the distribution of natural vegetation, which consists largely of grasses, shrubs, and forest trees (Fig. 82). The northern part of North America, especially the area lying near the Arctic Ocean, is covered either with ice or with tundras (sec. 30). The southern part of the continent lies in the Hot Belt and for that reason it is covered with dense forests in the well-watered areas, and with grasslands where the rainfall is less abundant (Figs. 82 and 499). Here such products as bananas, rubber, and coffee may be grown.

The large, well-watered area of North America lying between the Arctic tundras at the north and the Hot Belt in the south is really the most important region of the

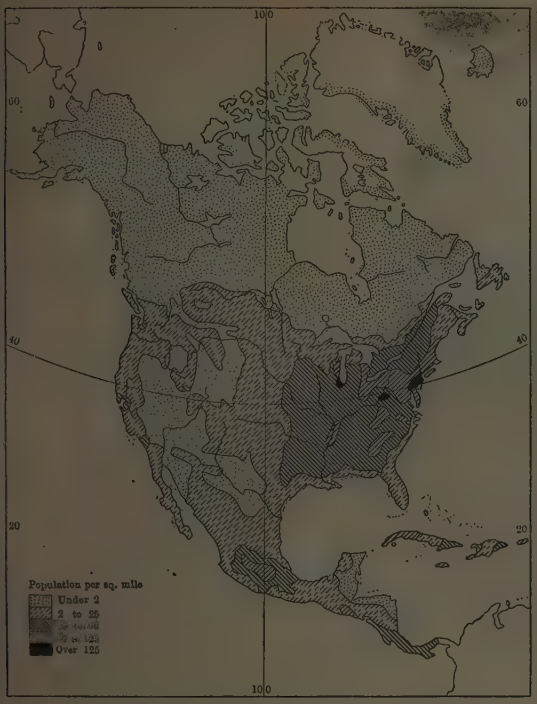


FIG. 83. **Distribution of population in North America.** Why does the density of population decrease westward from the 100th meridian? (Consult Figs. 78, 81, and 82 for physical features, rainfall, and vegetation.) Why is the population so thinly distributed over the northern part of North America? What large cities lie in the three black areas?

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FIG. 84. **Distribution of minerals in North America.** Show that the important industrial minerals are well distributed in the United States. Why are coal and iron ore usually mined in large quantities only in thinly settled regions? Consult your dictionary for the names of any minerals you do not know.

continent. This vast area lies within the Temperate Belt and contains fine forests and rich grasslands. The region is well adapted to the growing of all temperate-climate crops, such as corn, wheat, and cotton, and to the raising of such animals as hogs, cattle, sheep, and horses.

How climate affects the distribution and activities of population. Because the broad central part of the continent lies in the Temperate Belt, North America is well suited to support a dense population depending upon agriculture as well as upon manufacturing and other industries. Although today more than 150,000,000 people are living in North America, there is still room for many millions more. The cold region of the north, the dry sections, and the extremely hot areas of the south are as yet sparsely populated (Fig. 83).

42. ADVANTAGES OF NORTH AMERICA'S GREAT MINERAL WEALTH

THE LESSON FORECAST

1. The coal and iron-ore resources of North America.
2. Value of the great supply of copper and lead.
3. Minerals not found in North America.

The necessity for mineral resources. No nation can succeed in manufacturing and rank high industrially unless it has abundant and available resources of iron ore and coal. Steel is made from iron through the use of heat secured from coal (Appendix, Fig. 508). It is one of our chief building materials and is used also in making machinery and rails for railroads. Modern industry requires an ever-increasing supply of steel.

Ewing Galloway

FIG. 85. **Scene on the Welland Canal.** Two large lake freighters are passing through this canal which connects Lake Erie with Lake Ontario (Fig. 134). Why was it necessary to build this canal? In what country is it? Can you name other canals on the Great Lakes route?

This canal has been enlarged three times. Explain the advantages of making it large enough for ocean-going vessels to pass through. Trace the route of a ship sailing from Duluth to Toronto. Through what bodies of water will it pass?

The chief minerals found in North America. North America is fortunate in possessing not only vast supplies of coal and iron ore but also many other important minerals (Fig. 84). Among these are copper (Fig. 506) and lead which are so necessary in making all kinds of electrical apparatus, telephone and telegraph wires, radio aërials, and many other useful things. North America also has rich supplies of gold and silver. It is lacking, however, in certain industrial minerals, such as tin, platinum, and nitrates. These minerals it must therefore import.

Other valuable mineral resources in which the continent is rich are petroleum (Fig. 502) and salt. Gasoline, kerosene, and other oils are derived from petroleum, while salt is needed by all animals including man.

43. FACILITIES FOR TRANSPORTATION IN NORTH AMERICA

THE LESSON FORECAST

1. The great railway mileage of our continent.
2. How good transportation routes made possible the development of the continent of North America.

The waterways and railways of North America. We have already learned something of the great interior waterways of North America and especially of the Great Lakes route. The large rivers, however, run mostly from north to south, while the bulk of our trade is carried on across the continent from east to west.

Most of the transportation of goods is, therefore, carried on by railroad, and North America has more railway mileage than any other continent. In Canada, in the United States, and in Mexico and Central America freight can easily be carried by rail from coast to coast.

If the Great Lakes are ever connected with the Atlantic by canals deep enough to accommodate large vessels, our waterways will be much more important in the future than they have been in the past (Fig. 85). Such canals will make it possible to carry on trade by boat between the rich areas of the Middle West and other continents.

44. CHARACTER OF NORTH AMERICA'S POPULATION

THE LESSON FORECAST

1. The original people of the continent.
2. The early settlers of America.
3. Why Europeans came to America.

The original inhabitants of the continent. With the exception of the Eskimos who lived in Alaska and in northeastern North America, various Indian tribes formerly occupied the whole continent. These tribes spoke many different languages and in civilization ranged

from savagery to tribes that to some extent practiced agriculture. The true savage lived on plants he could find and animals he could kill without a gun. Today most of the Indians of North America live in the western and northern portions of the continent and in Mexico and Central America.

The present population of North America. The larger part of North America is now occupied by descendants of the early colonists who came from various countries of Europe, or by immigrants who have come more recently. From the earliest colonial times up to the present day people have been coming to the American continent to improve their living conditions. It took courage for the early settlers to come to this new country and struggle to make a living in a region covered with dense forests and inhabited by hostile Indian tribes and wild animals. It was the daring, courageous spirit of these pioneers which slowly extended the boundaries of our own nation from the coast of the Atlantic to that of the Pacific.

SOME RELATED PROBLEMS

1. Why is the great width of the Temperate Belt in the continent of North America a distinct advantage?
2. Why does the central part of our continent have greater extremes of temperature than the coast areas at the same distance from the Equator?
3. Why is there more rainfall near the western coast than on the eastern slope of the mountains bordering the coast?
4. What advantage as a waterway has the Gulf of Mexico over Hudson Bay?
5. What relation does rainfall in North America bear to the distribution of population?
6. Why are there more railways in the central and eastern sections of North America than in the western or northern sections?
7. Why did the Indians have to give up a large part of North America to the white man?

THE UNITED STATES AND THE VARIED INTERESTS OF ITS PEOPLE

45. WHAT THE MAPS, TABLES, AND GRAPHS SHOW

Problems:

1. In explaining the varied interests of the people of the United States, what maps ought to furnish the needed information? (*a*) What does the physical map (Fig. 86) show as to the distribution of various occupations? (*b*) What necessary information can we get from climatic maps? (*c*) What can we learn from the maps of natural resources as to where people live and what they are doing? (*d*) How does the railway map indicate the places where trade is most active? (*e*) How many areas of dense population does the population map show? (Fig. 104.) (*f*) What natural resources are shown on the vegetation map of North America? (Fig. 82.)
2. To what extent do the states of our country have physical features as boundaries? (*a*) Find the three states that are bounded entirely by straight lines (meridians and parallels). (*b*) Which state is divided into two parts by lakes? (*c*) Which one has most ocean boundary? (*d*) How many kinds of boundaries has the state of Texas? (*e*) What proportion of the boundary of Arizona is river? (*f*) What is the nature of the boundary between Idaho and Montana? between Tennessee and North Carolina? between New York and Ontario? (*g*) Why are mountain crests better boundaries than rivers? (Secs. 34 and 35.)
3. What reasons can you find on the maps for the location and growth of certain cities of our country? (Sec. 27 and Fig. 89.) (*a*) Find four large coastal cities at river mouths. (*b*) How far from the ocean are Philadelphia, New Orleans, and Portland, Ore.? (*c*) Suggest reasons for their location. (*d*) Find four large cities that lie at or near the junction of river valleys.

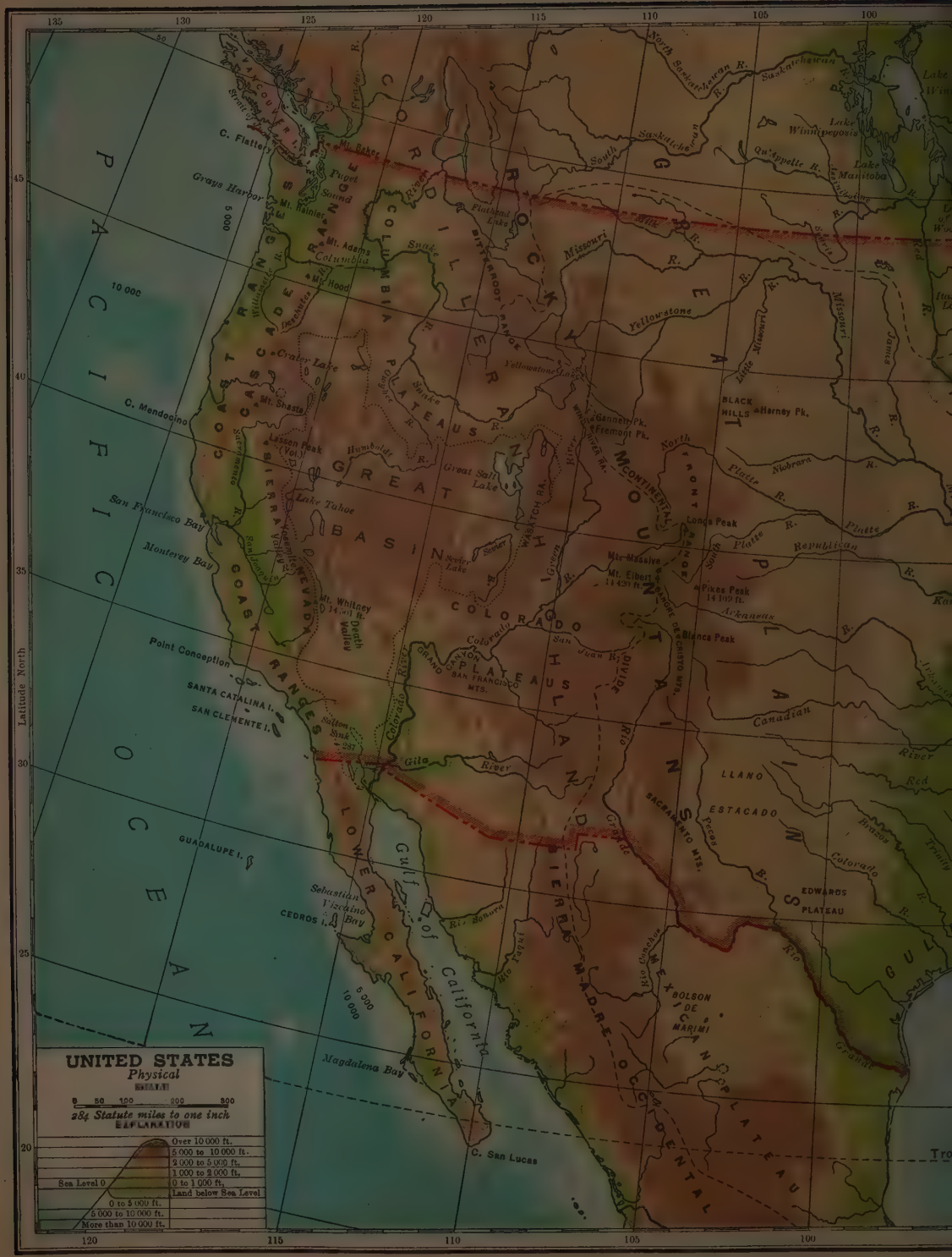
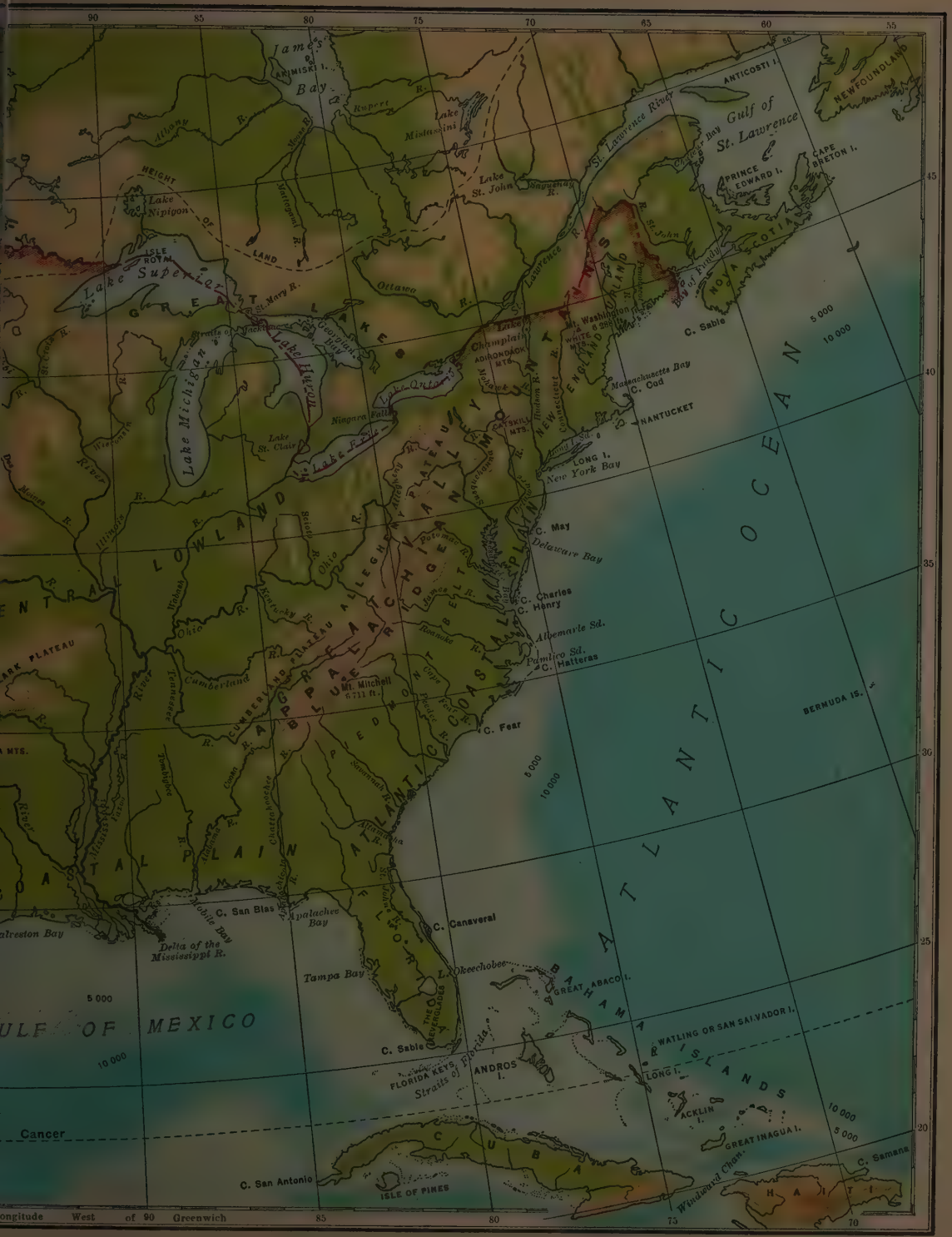


FIG. 86. A Physical M



the United States

(*e*) Find four cities at the crossing of several railway routes. (*f*) Show that Detroit is a crossroads city. (*g*) Find Denver, Cheyenne, Pueblo, Roanoke, Reno, and Knoxville (Fig. 89). Note the railroads in the vicinity.

4. What do the maps of natural resources and the railway map show as to the diversity of interests of the people of the United States? (*a*) Where is agriculture most important, and what are the chief crops and the animals that are raised there? (*b*) Which ten states use most water power? (Appendix, Fig. 512.) (*c*) Where are the most important mining regions? (Fig. 95.) (*d*) Where are most of the large cities situated? (Fig. 89.)

5. The political map (Fig. 89) shows clearly the largest and smallest states. (*a*) Outline the state of Texas on a piece of transparent paper. See how nearly you can trace Montana within the state of Texas. Within Montana trace Nebraska, within Nebraska place Pennsylvania, and within Pennsylvania the three states of Massachusetts, Connecticut, and Rhode Island. (*b*) How do they compare in size? (*c*) Construct a table of the comparative areas of ten states, using Ohio as the unit of measure. To do this you will need to consult the Appendix, dividing the area of Ohio into the area of each of the other states. Your home state should be in the list.

6. By what water routes could one make an inland trip from the Gulf of Mexico to the Gulf of St. Lawrence?

7. With what foreign countries does the United States carry on a large trade? (Fig. 73.)

8. What states could be seen today by a traveler following the route of the Lewis and Clark Expedition? the Oregon Trail? the Santa Fe Trail?

9. What states are included wholly or in part in the Louisiana Purchase?

10. What states are included wholly or in part in territory that once belonged to Mexico? To answer questions 8, 9, and 10, consult your history.

46. THE ADVANTAGES OF THE LOCATION OF THE UNITED STATES

THE LESSON FORECAST

1. Why we naturally trade with Europe.
2. The advantages of our location between Europe and Asia.
3. Why we trade less with Asia than with Europe.
4. Why trade is easily carried on with countries south of the United States.

The location of the United States compared with that of Europe. The United States is about as large as the whole of Europe and has room, therefore, for a large population. In some ways our country has a much better location than Europe. For instance, no part of the United States lies in the cold arid region, while a large part of northern Europe is a cold desert (Figs. 82 and 321). Our country is fortunate in having a great ocean highway on the east, south, and west, and a rich region to the north. The surroundings of Europe are not so favorable, for the northern ocean is frozen during most of the year, while much of the eastern border faces the great desert of western Asia.

Our country's favorable position for trade. Since only the narrow Atlantic separates us from the industrial nations of Europe, it naturally follows that we have a large and growing trade with them. The Pacific Ocean, although broader, is not too broad to afford a splendid opportunity for trade with the densely populated countries of eastern Asia (Fig. 73).

In addition, the Gulf of Mexico, the Caribbean Sea, the Panama Canal, and the Atlantic Ocean provide short and easy routes for trade with the countries of Central and South America. Thus the United States is especially well situated for trade with all the continents with the exception of Africa and Australia. These advantages of location explain, in part, why our foreign commerce is large.

Courtesy U. S. Department of Agriculture

FIG. 87. **A valley in Arizona.** This view, taken about twenty miles southeast of Phoenix, shows the desert vegetation in the valleys of this region. The strange, tall plants which you see growing here are cactuses. What do you think the chief colors are in this landscape? Do you think these colors change from season to season?

47. THE LARGER PHYSICAL REGIONS OF THE UNITED STATES

THE LESSON FORECAST

1. What is included in a landscape.
2. Why it is best to begin our study at the Atlantic coast.
3. The region in which the first English settlement was made.
4. The extent and nature of the Coastal Plain.
5. How the continental shelf is gradually changing.
6. How the alluvial plains of the Mississippi are used.
7. The value of different sections of the Coastal Plain.
8. How drowned valleys are formed.
9. The extent and height of the Appalachian Highland.
10. Where the Piedmont country is and how it is used.
11. What the Fall Line is and why it is so important.
12. Where the Appalachian Mountains are and what rivers break through them.
13. The importance of the Appalachian Mountains.
14. Where the Great Valley is and its divisions.
15. Why the Great Valley is particularly important.
16. The divisions of the Appalachian plateaus.

Courtesy the Laings

FIG. 88. **A view along the Columbia Highway.** This beautiful highway follows the Columbia River, which forms part of the boundary between Washington and Oregon (Fig. 208). What do you think the chief colors are in this landscape? Would you rather live in this region or in the one shown in Fig. 87? Give the reasons for your answer.

17. The coal resources of the Allegheny Plateau.
18. How the pioneers crossed this barrier.
19. Why the coal resources of the Cumberland Plateau are not developed.
20. Why the Catskills are a popular summer resort.

What we mean by surface features. We have already seen some of the ways in which the larger surface features of a country influence the distribution of people and hence of industries. Highland areas are usually thinly populated, while on plains there may be found great cities and many different kinds of industries. But it is not enough to know about just the large features that may be shown on a physical map. In order to understand why people live where they do and what they are doing for a living, we need to know something about the details of the landscape of each region. In a motion picture or a play it is the details, or setting, of the scenery which help us to understand the story being played.

By the term landscape is meant something more than hills and valleys, plains and mountains (Figs. 87 and 88). A landscape must also include the vegetation which gives it color. In dry countries where there is little

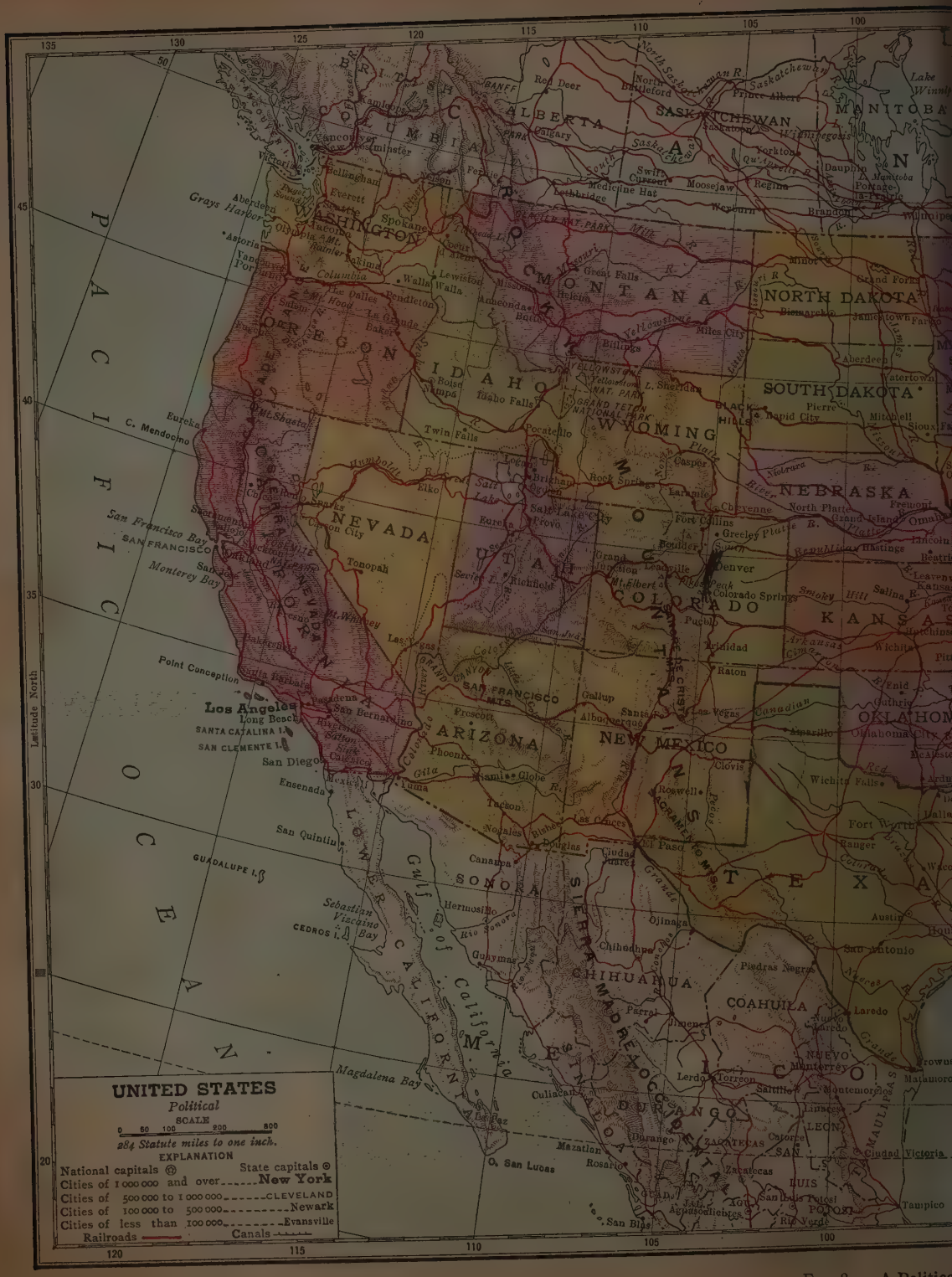
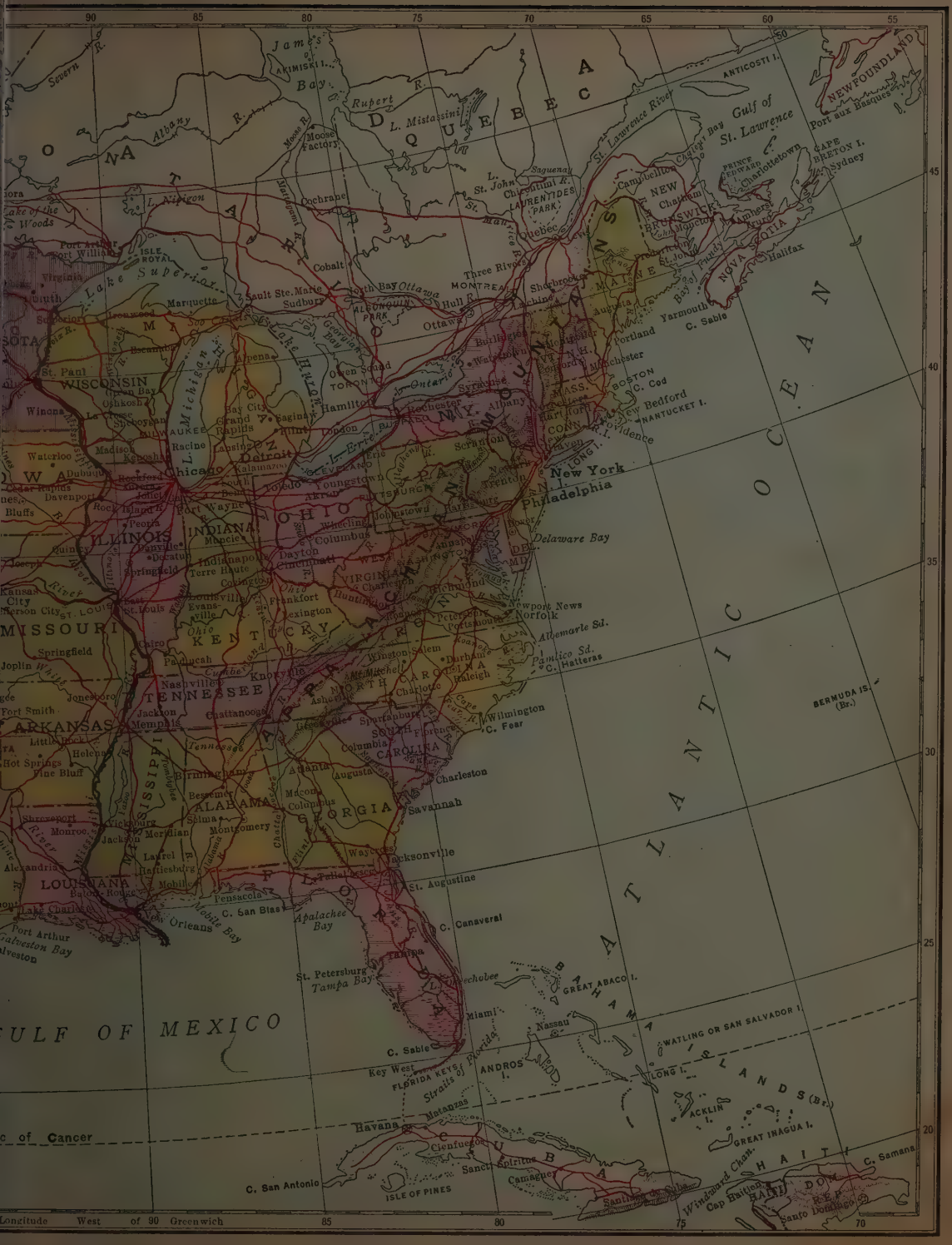


FIG 89. A Politica


ATLANTIC OCEAN
GULF OF MEXICO
Tropic of Cancer
Longitude West of 90 Greenwich
90
85
80
75
70
65
60
55
50
45
40
35
30
25
20
QUEBEC
ONTARIO
MANITOBA
MINNESOTA
WISCONSIN
MICHIGAN
ILLINOIS
INDIANA
OHIO
KENTUCKY
TENNESSEE
MISSOURI
ARKANSAS
LOUISIANA
MISSISSIPPI
ALABAMA
GEORGIA
FLORIDA
SOUTH CAROLINA
NORTH CAROLINA
VIRGINIA
WEST VIRGINIA
PENNSYLVANIA
NEW YORK
MAINE
VERMONT
NEW HAMPSHIRE
MASS.
CONN.
R.I.
N.J.
DEL.
MD.
Lake Superior
Lake Michigan
Lake Huron
Lake Erie
Lake Ontario
Hudson Bay
James Bay
Gulf of St. Lawrence
St. Lawrence River
Chesapeake Bay
Delaware Bay
Albemarle Sd.
Pamlico Sd.
Mississippi R.
Ohio R.
Missouri R.
Rio Grande
Colorado R.
Columbia R.
Yukon R.
Mackenzie R.
Saskatchewan R.
Red R.
Albany R.
Severn R.
Nelson R.
Churchill R.
Moose R.
Rupert R.
Ottawa R.
St. John R.
Saguenay R.
Hudson Str.
Davis Str.
Baffin Bay
Greenland
Iceland
Ungava
Labrador
Newfoundland
Anticosti I.
Port aux Basques
Cape Breton I.
Sydney
Charlottetown
Prince Edward I.
Halifax
Nova Scotia
New Brunswick
Quebec
Montreal
Ottawa
Toronto
Hamilton
Kingston
Three Rivers
Sherbrooke
Lake St. John
Chicoutimi
Laurentides Park
Algonquin Park
Cochrane
Timiskaming
Sault Ste. Marie
Sudbury
North Bay
Cobalt
Port Arthur
Fort William
Isle Royale
Duluth
Superior
Marquette
Escanaba
Green Bay
Milwaukee
Chicago
Rockford
Madison
Racine
Kenosha
Waterloo
Dubuque
Davenport
Rock Island
Moline
Peoria
Springfield
Decatur
Quincy
Hannibal
St. Louis
Kansas City
Joplin
Springfield
Fort Smith
Little Rock
Hot Springs
Pine Bluff
Helena
Memphis
Jackson
Vicksburg
Shreveport
Monroe
Alexandria
Natchez
Baton Rouge
New Orleans
Lake Charles
Port Arthur
Galveston
Houston
Beaumont
Corpus Christi
Brownsville
Laredo
Eagle Pass
El Paso
Albuquerque
Santa Fe
Las Vegas
Denver
Colorado Springs
Pueblo
Cheyenne
Omaha
Council Bluffs
Sioux City
Des Moines
Cedar Rapids
Iowa City

vegetation, the landscape colors are largely those of the surface rocks. In most sections of our country, however, we have grass or growing crops, or trees, the color of which changes with the season.

The appearance of a country depends, therefore, on its surface features, its climate, and its vegetation. Vegetation, as we have seen, depends upon climate. In the study of our great country we shall learn what may be seen in its large and widely differing sections.

For convenience we divide the United States into several large regions, each of which in its physical features differs from the bordering areas (Fig. 86). Some of these regions, as we have already learned, extend into Canada (Figs. 78 and 254). At present, however, we shall study only the parts of these regions lying within our own country.

It is most convenient to begin our study with the eastern coast, for that is where the earliest settlements were made. As we travel westward through the country, we should keep in mind the first explorers and their discoveries. We must remember how these explorers traveled and what difficulties they met with in their journeys which marked trails used by settlers who followed later.

Since the history of our country really began with the settlement of Jamestown, Va., let us start with the Coastal Plain where this first little village was located.

The Coastal Plain. Bordering the Atlantic and Gulf coasts from New York to Mexico is a broad, low-lying, and generally flat region which is known as the Coastal Plain. The rocks underlying this plain were formed beneath the sea not many ages ago by sands and clays which were deposited just as sands and clays are now being deposited on the edges of the ocean. The Coastal Plain is now a part of the continent, but its long slopes continue offshore forming the continental shelf. This shallow area is shown on the map (Fig. 86).

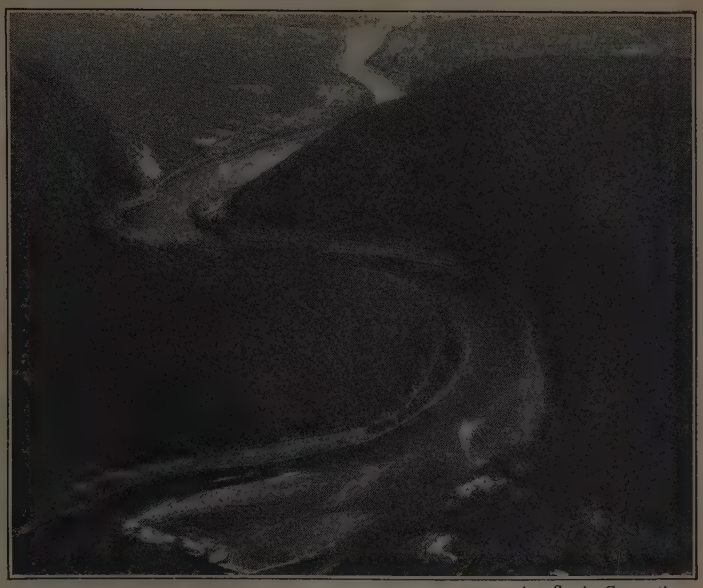
This continental shelf is being slowly built up with materials brought down to the sea by the rivers, or washed away from the beaches and cliffs. The shallower portions of the continental shelf, as we have already seen, are great fishing grounds (Fig. 79).

That portion of the Coastal Plain bordering Florida, Alabama, and Mississippi is commonly called the Gulf Coastal Plain. It is separated from the western portion, which borders Louisiana and Texas, by a river-made plain formed of the deposits brought down by the Mississippi and its tributaries. This Mississippi plain extends from near the mouth of the Ohio to the Gulf of Mexico where the great river is slowly building out a delta.

A plain built in this way by a river is called an alluvial plain. Such plains are found along the lower portions of most great rivers and usually are important because of their fertile, productive soil. The Ganges, Nile, and Amazon rivers are all bordered by broad alluvial plains. The Mississippi alluvial plain, with its rich soils and favorable climate, is covered with forests or devoted to the raising of cotton, sugar cane, and other crops. In some places, however, it is too wet and swampy even for trees to flourish.

The soil of the Coastal Plain is deep and generally fertile. In many places the areas of poor soil are covered with forests. The areas of rich soils are given over to agriculture, and here grow vegetables, fruits, and tobacco. On the Coastal Plain bordering the Gulf, cotton, sugar cane, and rice are produced.

From Virginia northward the Atlantic coast is slowly sinking, thus allowing the water of the ocean to flow in upon it and fill the lower part of the river valleys. These water-filled valleys are known as drowned valleys. Delaware, Chesapeake, and New York bays are all drowned valleys, and on them are our largest Atlantic ports (Fig. 89).



Aero Service Corporation

FIG. 90. **An airplane view of Delaware Water Gap.** This is the gorge cut by the Delaware River as it passes through the Kittatinny Range of the Appalachian Valley on its way from the Catskills to the Atlantic Ocean. Mountains from 1,000 to 1,500 feet in height rise on each side of the gorge, which is about two miles long. How do you think this water gap helped in the early settlement of the Middle West?

Two railroads, one built on each bank of the river, now run through Delaware Water Gap. Why did they follow the river in making their way through this region? Can you name any other water gaps which aid travel and transportation in the eastern part of our country?

The Appalachian Highland. To the west and bordering the Coastal Plain is the Appalachian Highland extending from the Gulf of St. Lawrence to central Alabama. In places the highland forms a great mountain wall which makes travel difficult between the coastal region and the area farther west.

The eastern part of this highland is a rolling or hilly region known as the Piedmont Belt (Fig. 86), which extends from New York to central Alabama. Swift rivers from the mountains flow through deep valleys across it and across the Coastal Plain. Because the rocks of the Coastal Plain are softer and much more easily worn away than those of the Piedmont, rapids or falls have been formed in many rivers where they flow from the Piedmont onto the Coastal Plain.

This line of descent is known as the Fall Line and along it have grown up many large cities, among which are Philadelphia, Baltimore, Richmond, and Raleigh (Fig. 89). The largest of these cities grew up on drowned river valleys, so that the Fall Line is also the upper limit of ocean navigation. The abundance of water power furnished by the waterfalls gave these cities an early start in manufacturing, while their opportunities for commerce have made possible their continued growth. Thus we see that, while the Piedmont is an agricultural region, it also offers advantages for manufacturing.

West of the Piedmont are the Appalachian Mountains, broken in the northern section by the valleys of the Hudson, Delaware (Figs. 90 and 93), Susquehanna, Potomac, and James, each of which is occupied by a railroad. South of the James the mountains are higher and broader, and no river valley furnishes a natural route through them. Railroads follow routes through gaps between the higher points in the mountains.

The Appalachians are high with forested slopes, and their surface is so rough that farming is possible only in the few river valleys. In the north the forests are mostly pine, spruce, and hemlock that are green the year round. These evergreen trees were early used for lumber, and certain kinds are especially good for paper making. In the south the trees are hardwoods, valuable in the making of furniture and tools and in the

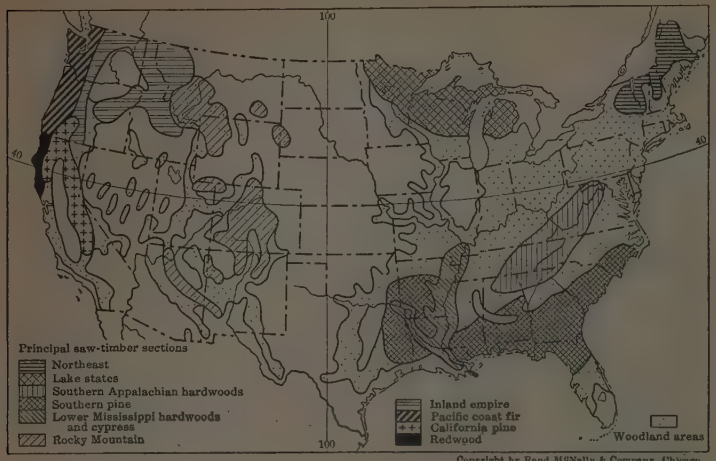


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FIG. 91. **The lumber resources of the United States.** Although trees grow in the region shown here in white, they do not furnish timber suitable for the various industries needing sawed lumber. Can you give the reasons for this? (Fig. 86.)

How much of the woodland area in the eastern United States do you think was formerly covered with timber that could be used for lumber? What use is now made of most of this land? (Fig. 94.) Compare the great area of southern pine with the very small area of redwood.

construction of buildings. Although the Appalachian forests are still useful, this is no longer a great lumber section (Fig. 91). Among the rocks of the highland are slate, marble, and granite, all of which are valuable. Quarrying therefore began early, and is still carried on in many localities.

Just west of the Appalachian Mountains lies the Great Valley (Fig. 86), extending from the St. Lawrence River into Alabama. This so-called valley is really a lowland made up of many fertile valleys separated by narrow ridges. Best known among these valleys are the Shenandoah in Virginia, the Lebanon and Cumberland in Pennsylvania, the Hudson in New York, and the Tennessee in Tennessee. From the Hudson to the James the Great Valley is easily reached, especially from the east, and hence it formed a natural highway for exploration, and later a route for trade and travel. The valley soils are generally rich and the climate favorable. This section therefore has many important railways and a number of thriving cities. During the Civil War the Great Valley, a natural highway between North and South, was the scene of much marching and bitter fighting.

On the west from New York to Alabama the Great Valley is bordered by the high edge of a plateau, the southern part of which is known as the Cumberland Plateau, and the northern as the Allegheny (Figs. 86 and 92). The Allegheny Plateau has been deeply cut into by rivers, thus exposing the rich beds of coal which lie under its surface. The rich soft-coal deposits of both Pennsylvania and West Virginia are found in this plateau. Because of the rough character of the surface, travel and transportation over the plateau are difficult, and much of its area is still covered by forests. The rivers have not cut so deeply into the Cumberland Plateau, and therefore its coal deposits are not easily accessible. At the southern end of the Cumberland Plateau, however, lie the rich deposits of the Alabama coal district. In the Cumberland Plateau lumbering and grazing are more important than mining. The high plateaus had to be crossed by explorers and settlers of the Middle West, many of whom, like Daniel Boone, journeyed from the southern coast states and from the Great Valley. River valleys across the plateaus are few, and the one good route through Cumberland Gap is of great importance. At the north the Allegheny Plateau ends in the Catskill Mountains which face the Hudson River. These mountains, because of their great scenic beauty and nearness to large cities, have many popular summer resorts.

Courtesy U. S. Department of Agriculture

FIG. 92. **A view in a valley of the Allegheny Plateau.** This valley lies in that part of the Allegheny Plateau which crosses West Virginia. Notice the farm in the foreground and the forested slopes in the background. Why do you think the farmer planted his corn on the most level ground he could find? Do you think grazing could be carried on successfully in this valley?

Why are there few good roads in this region? How will this lack of good roads affect the kind of crops raised? Can you explain why children living in such regions sometimes have little schooling?

Ewing Galloway

FIG. 93. **A view in the valley of the lower Hudson.** This small, beautiful lake is located in Palisades Interstate Park, New York state. There are over 38,000 acres in this park, which has been set aside by the states of New Jersey and New York as a place of recreation. Some of the most beautiful scenic spots in the East are found in this highland region.

Besides boating, what other sports do you think might be enjoyed in this region? Explain why such a park, set aside for recreation, should be made easily accessible from the large cities near by. Can you name three other state parks? Is there a state park near your home town?

48. OTHER LARGE PHYSICAL REGIONS OF THE UNITED STATES

THE LESSON FORECAST

1. The extent and usefulness to man of the Prairies and Great Plain.
2. Location and use of the small highland areas in the Plain.
3. Extent of the Cordilleran Highland.
4. The extent and divisions of the Plateau and Basin Region.
5. How the Pacific Range and Valley Area is divided.
6. Some distinctive features of the Pacific Ranges and Valleys.

The Interior Plain, and associated highlands. The Interior Plain, sometimes called the Great Central Plain (Fig. 78), extends from far north in Canada south to the Gulf of Mexico, and westward from the Appalachian region more than a thousand miles to the

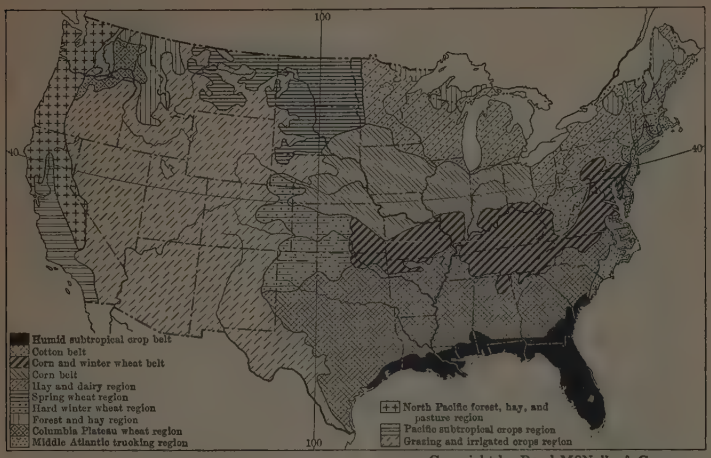

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FIG. 94. **Agricultural regions of the United States.** Compare this map with the rainfall map, Fig. 98. What relation do you find between rainfall and agriculture? Which states are included in the Cotton Belt? the Corn Belt? the corn and winter-wheat areas? the spring-wheat area? the hay and pasture area?

Can you explain why the belts of wheat, corn, and cotton and the subtropical belt extend in an east-west direction? Why the grasslands of the Great Plains and the Pacific forests extend in a north-south direction? (Figs. 86, 98, and 496.)

Rocky Mountains. Here in places it rises to heights of more than 5,000 feet. This great plain extends so far east and west and north and south that it has many varieties of climate. In the section lying east of the 100th meridian the summers are hot and moist. When first discovered, this section, known as the Prairies, was covered with tall wild grass that furnished food for thousands of buffaloes. Today it is the great corn- and wheat-raising section of the country and one of the greatest food-producing regions of the world (compare Figs. 82 and 94).

West of the 100th meridian the climate is dry, and grass does not grow luxuriantly. This area, known as the Great Plains (Fig. 78), was long a noted grazing region where cowboys tended great herds of cattle. Today grazing and grain growing are the chief occupations. Because of the gentle slopes of the plain, the building of railroads and public highways is easy, and farming on a large scale can be carried on. With excellent transportation, by both rail and water, the products of the Prairie states can be sent to market easily. This region has therefore developed rapidly and now contains many large cities notable for both trade and manufacturing.

Three small highland areas interrupt the generally level surface of the Great Central Plain. In Missouri and Arkansas are the Ozark Plateau and the Ouachita Mountains (Fig. 86), both rich in minerals and lumber. The Superior Highland area is a small arm of a great region in Canada which borders the western end of Lake Superior. Within this small area is found the richest iron-ore region in our country and one of the most important in the world (Fig. 95).

The Black Hills, lying in western South Dakota and eastern Wyoming, form another break in the plains. They are rich in gold deposits and are covered with extensive forests which yield much valuable timber. These hills are famed for the beauty of their scenery.

The Cordilleran Highland and its associated valleys. The Great Plains is bordered on the west by the Rocky Mountains. These ranges form the east wall of the Cordilleran Highland (Fig. 86) which extends to the Pacific. In this highland, which is the greatest highland of the North American continent, are many regions of great scenic beauty, of which the best known are the Rocky Mountains. Indeed, the Cordilleran Highland is often called the Rocky Mountains because these ranges form the most famous section of the great highland.

The Rocky Mountains are rough and rugged with long, steep slopes, and the

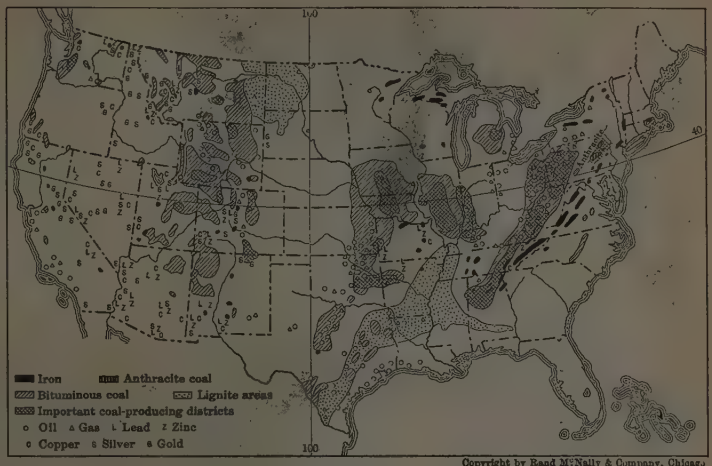

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FIG. 95. **The principal mineral resources of the United States.** Find out the meaning of lignite. Why are bituminous coal and anthracite mined more extensively than is lignite? Visit your coal dealer and ask him for samples of different kinds of coal. Find out where each kind came from and the use for which it is best adapted.

In what states are deposits of iron ore found? In what states are gold and silver found? Is petroleum generally found in mountain areas or in plains? (Sec. 34.) Can you give the reasons for your answer?

passes over which travel must cross are often very high. The mountains are rich in minerals, such as gold, silver, copper, coal, and petroleum, and mining is therefore one of the chief industries (Fig. 95). The larger cities have all grown up near the mining centers. The mountain valleys are valuable for grazing, and great numbers of cattle and sheep are raised. A number of national parks have been established in the Rockies, among which are Yellowstone National Park, Rocky Mountain National Park, and Glacier National Park. Because of their beautiful scenery and because of the many interesting wild animals found in them, these regions have been reserved as great national playgrounds.

West of the Rocky Mountains and extending from Canada into Mexico is a section known as the Plateau and Basin Region. The northern part of this vast area is known as the Columbia Plateau (Fig. 86). The soil here is rich, but there is so little rainfall that farming is not possible except where irrigation or dry farming can be carried on (Fig. 218). Dry farming is a type of agriculture which makes it possible to raise certain crops even though the rainfall is scanty.

The central section of the Plateau and Basin Region is known as the Basin and Range Area because of its many ranges of mountains, and because over a great extent of it the climate is so arid that the waters of the streams dry up before they reach the sea. Here lies Great Salt Lake (Fig. 86), a body of water without an outlet. The water of this lake is so full of salt that a person may float upon its surface like a cork. Quantities of salt are produced by evaporating the briny waters of this great lake.

The southeastern part of the Plateau and Basin Region is the Colorado Plateau, best known because of its wonderful canyon, the most famed of all the beautiful river valleys of the world. Here the Colorado River has cut down more than a mile into the rocks of this high region. The bright coloring of its rocky walls and its great depth and width make this canyon a sight too impressive to be easily described.

On the plateau are found many interesting ruins left by ancient people who lived in walled villages known as pueblos, or in dwellings cut into the cliffs (Frontispiece).

Throughout the Plateau and Basin Region grazing is carried on extensively, the highland pastures furnishing grass in summer and the lower valley lands pasturage in winter. The region is rich in minerals especially copper, gold, and silver (Fig. 95).

Asahel Curtis Photo Co. Seattle, Wash.

FIG. 96. **Felling a Douglas fir.** This giant evergreen is found throughout the forests of the Northwest. This region, which includes western Oregon and Washington, is one of the chief sources of our lumber supply. By what routes do you think the lumber is shipped to the East? In what various forms may it be sent?

Lying between the Pacific Ocean and the Plateau and Basin Region is the region known as the Pacific Ranges and Valleys. This area is renowned for its rich valleys, the best known of these being the Sacramento-San Joaquin Valley and the Puget Sound Basin or Lowland. It is also famous for the great mountain ranges of the Sierra Nevada, the Cascades, and the Coast Ranges. Here in the valleys are some of the finest farming and fruit-raising sections of our whole country. The mountains are notable especially for their minerals and forests, the northern ranges being our most important lumber-producing region (Figs. 91 and 96).

SOME RELATED PROBLEMS

1. On a globe, trace the shortest route from San Francisco to Yokohama, Japan.
2. Why is dairying more important in the northern part of the Allegheny Plateau than in the Cumberland Plateau?
3. Learn and compare the distance by boat from New York to Buenos Aires, Argentina, with that to Valparaiso, Chile.
4. Name the waters you would pass through and the countries you would see on an ocean trip from Boston to Seattle.
5. Why did the early explorers find a series of Indian villages on the Fall Line?
6. Why is a sinking coast more irregular in outline than one that is rising?
7. Where are the lowest passes in the Rocky Mountains as indicated by the crossing of the railroad routes?
8. Why is there a greater need for vacation lands and summer resorts in the northeastern section than in other parts of the United States?
9. What great region lies between the Rocky Mountains and the Pacific Coast Ranges? How wide is this region?

49. THE WEATHER AND CLIMATE OF THE UNITED STATES

THE LESSON FORECAST

1. Why we should study about weather and climate.
2. What is meant by weather.
3. What climate is and how it differs from weather.
4. The chief cause of the weather changes in our country.
5. What is meant by a cyclone; by an anticyclone.
6. How cyclones and anticyclones affect the direction of the winds, the temperature, and the rainfall.
7. Why cyclones bring rain and changes of temperature.
8. Why rain comes to the interior of our country in summer.
9. Why the interior has more rainfall in summer than in winter.
10. What is meant by unseasonable weather.
11. What is meant by the growing and the dormant seasons.
12. Why the growing season is an important one.
13. How the growing season varies in different parts of the country.
14. How the growing season is influenced by rainfall and sunshine.

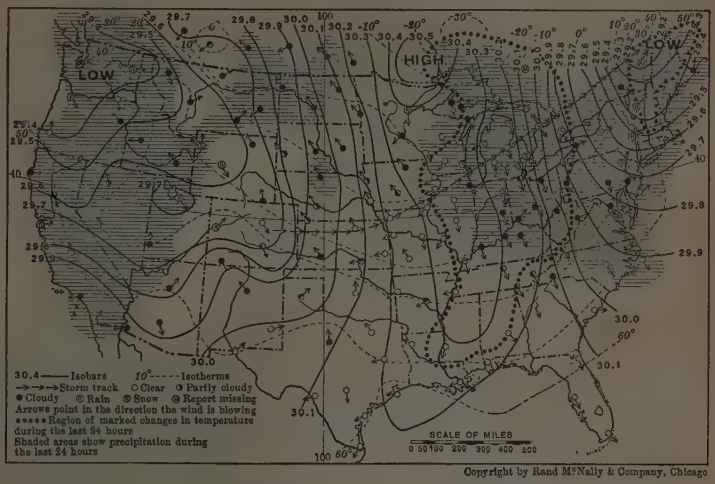
LOW
HIGH
LOW
30.4——Isobars 10°----Isotherms
→→→Storm track ○Clear ◑Partly cloudy
●Cloudy ◐Rain ◑Snow ◑Report missing
Arrows point in the direction the wind is blowing
••••Region of marked changes in temperature during the last 24 hours
Shaded areas show precipitation during the last 24 hours
SCALE OF MILES
0 50 100 200 300 400 500

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FIG. 97. **A daily weather map.** Weather maps are prepared daily by the United States Weather Bureau. This map shows the weather conditions, Saturday, November 27, 1926.

Note the well-defined areas of low pressure over the states of Maine and Washington. Between these lows, north of lake Superior, is an area of high pressure. In which of these three areas has rain fallen during the last twenty-fours hours? Where is there the lower temperature? Note the arrows on the map. How do they indicate the direction of the wind and certain conditions of the weather?

What is meant by weather and climate. The vegetation in each of the larger sections of our country and the activities of the people depend not only upon the surface features but also upon the climate. We need, therefore, to know something about the several large climatic regions of our country, and how climate and physical features combine to influence the distribution of people and industries.

We know that at any time weather has to do with the conditions of the air. Whenever we speak of a day as being hot or cold, wet or dry, calm or windy, clear or stormy, we are talking about the conditions of the air or, in other words, the weather. We know that, as a rule, certain kinds of weather may prevail in each of the different seasons of the year. We also know that the weather often changes quickly, and then we say it is changeable.

For over fifty years the government has maintained a Weather Bureau in order to study the weather day by day (Fig. 97). From the records kept by this bureau we know fairly well what kind of weather may be expected in the different parts of the country. We also know from these records what the climate is in different parts of the country.

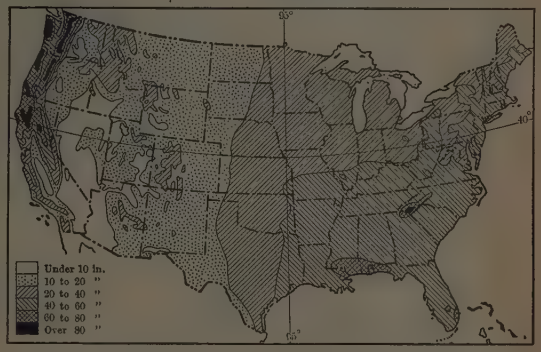

FIG. 98. **Distribution of rainfall in the United States.** This map is based on records kept by the United States Weather Bureau. Locate your home region by a dot on the map. In what rainfall belt is it? How can you explain the heavy rainfall on the western coast? Can you give the reason for the arid mountain region?

Every once in a while a weather record is broken; that is, the conditions recorded at the Weather Bureau show weather features that are more extreme than ever before known at that special time. It may be that a certain day of the year is colder or hotter than ever known before, or that the amount of rainfall in twenty-four hours has broken a record (Fig. 98). From such instances as these we find that we have not yet begun to learn all that there is to be known about the various weather elements, the chief of which are temperature, precipitation, or rainfall, and winds (Figs. 494, 495, 496, 497, and 498).

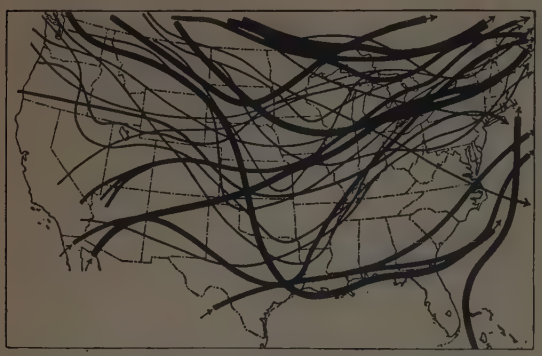

FIG. 99. **The paths of cyclonic storms, or lows, across the United States.** The width of each line is in proportion to the number of lows which have followed that path for ten years. Where do most of the lows enter the country? Where do most of them leave it? (Fig. 86.)

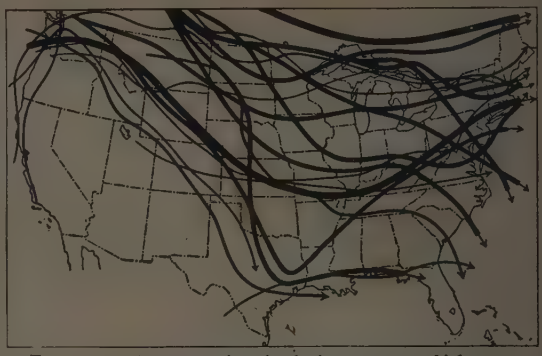

FIG. 100. **The paths of anticyclonic storms, or highs, across the United States.** The width of each line indicates the frequence of the highs along that path. Where do most of the highs enter the country? Where do most of them leave it? (Fig. 86.)

When we average the weather of a season or a year in order to describe its general condition, or the climate, we must keep in mind that each weather element may be expected to vary. An average temperature of 60°, for instance, does not mean much by itself. A month of days, each one of which averaged 60°, would of course average 60°. If half the days averaged 70° and half 50°, the average for the month would also be 60°. What is true of temperature is also true of all the other weather elements.

The nature of cyclones and anticyclones. Most of our weather changes from day to day are due to the passing over us of great eddies or whirling masses of light air which are separated from each other by areas of heavy air. The air in the air eddies moves as does the water in an eddy in a stream of water. The light-air eddies are called cyclones and usually bring stormy weather. The heavy-air areas are called anticyclones and usually bring fair weather (Figs. 99 and 100).

As these great whirling masses of heavy and light air, often hundreds of miles in diameter, move across the land from the west toward the east and the northeast, they produce many weather changes. The most noticeable is the change in the direction and strength of the wind.

Every day the United States Weather Bureau secures reports from all over the country. A daily weather map is then made showing where the stormy and the fair-weather areas are to be found (Fig. 97). From such a map it is possible to forecast the weather to be expected in most sections of the country. These forecasts are sent out by radio and published in the papers.

Wind is air in motion across the earth, and it blows from where the air is heavy to where it is light. For instance, as a cyclone from the west approaches the eastern states, they will have easterly winds, which bring with them moisture from the ocean. Near the center of a cyclone the air is rising and there will be a calm at the surface. The air rising in the center of a cyclone will be cooled. As it cools, the moisture is condensed and rain or snow falls, according to the season of the year.

From the center of an anticyclone the air blows out in every direction. As the wind moves on, it brings to the region over which it passes the temperature and moisture of the region from which it came. At the center of an anticyclone, however, the air is descending, and it is cool and dry. The areas over which these fair-weather winds blow will then have cool and dry weather. As a cyclone passes, stormy weather therefore

Fig. 101. A thunderstorm gathering on the Great Plains. This storm is developing on the east side of a cyclone, or low. The cloud masses are caused by currents of rising air. At the top the clouds are bright because in the sunlight, but lower down they are dark and gloomy. Is there any place in the picture where you think it is raining? Do you think the wind is blowing hard?

It is thunderstorms such as you see in the picture that bring much of our rain during summer. What kind of weather usually precedes a thunderstorm? What change often takes place in the weather after the thunderstorm?

gives way to clear skies and to fair-weather winds which come from the anticyclone following behind the cyclone (Fig. 101). Our coldest weather comes when the center of an anticyclone is passing over us. Our daily weather therefore depends upon whether a cyclone or an anticyclone is passing, and changes frequently when these great whirls of air are moving rapidly.

Sometimes we have the same kind of weather for several days. That means that the procession of cyclones and anticyclones which follow after each other is moving slowly across the country, and that it takes a much longer time than usual for one to pass by.

In summer the interior of the continent is warmer than the ocean. When there are no passing storm areas the wind blows from the heavier air areas over the ocean, bringing moisture with it. Occasional storms and frequent thundershowers (Fig. 101) on hot days bring needed rainfall to the great agricultural areas east of the 100th meridian at the season when moisture is most needed for the growing crops.

In winter most storm areas are large and move rapidly along fairly definite paths. The interior of the continent is then cold and dry, and winds, except during the time of passing storms, blow toward the oceans. Much of the Great Central Plain, except in its western section, lies far from the ocean and has, therefore, warm, moist summers and cold winters. In the sections lying nearer the Atlantic Ocean there are not such great differences between the summer and winter rainfall as are found in other parts of the country.

The growing and the dormant seasons. We are all interested in the four seasons, spring, summer, autumn, winter, but sometimes we forget that instead of four seasons we have really only two — the growing season and the dormant season. During the growing season plants spring up, insects are active, and wild animals and birds are busy raising their young. In the dormant or closed season plants do not grow, and most of the birds and insects desert the fields and woods.

The growing season is the most important season of the year for us, for that is the time when our food supply is produced. This season extends from the last killing frost in the spring to the first killing frost

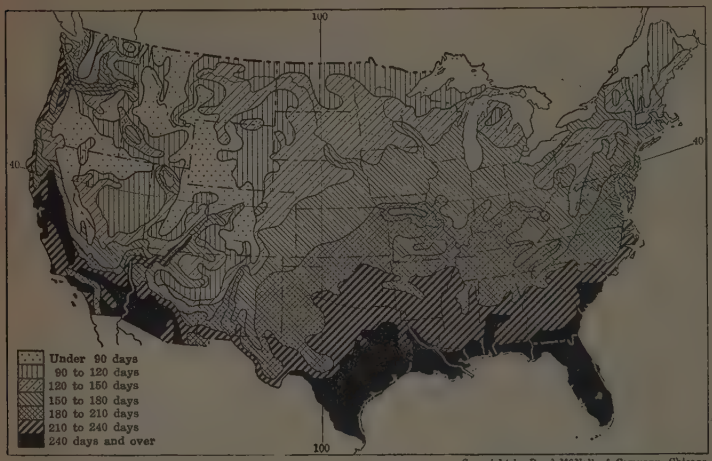

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FIG. 102. **The average length of the growing season in the United States.** The growing season is the time between the last killing frost in the spring and the first one in the autumn.

Besides distance from the Equator, what other things affect the length of the growing season? Why is there a longer growing season on the western coast than on the eastern coast? Can you explain why there are areas in the West with a growing season of less than ninety days? How long is the growing season in your home region?

in the autumn, and in the United States, of course, decreases in length from the south to the north.

The distribution of many of the crops upon which we depend is largely determined by the length and the character of the growing season. Cotton does not grow in the northern states because the warmest part of the growing season is not long enough (Fig. 102). Oats do not thrive in the southern sections because the season warms up too quickly. In some parts of the country the growing season is too dry for most crops (Fig. 103). Although the season may be long enough or warm enough, there is not sufficient water to feed the growing plants. Irrigation is often practiced in such sections, the water that falls at the season when it is not needed for farming being stored for use at the time when it is needed.

The growing season throughout the United States varies in length from less than 90 days in the northern Rocky Mountains to more than 240 days in the southern Coastal Plain (Fig. 102), the land of cotton, sugar cane, and citrus fruits.

In a great corn-producing region (Fig. 94) the growing season must be at least five months in length. And during this period there must be not only warmth enough and rainfall enough to keep corn growing, but, what is just as important, there must be plenty of sunlight. Corn cannot grow without an abundance of sunshine. A region in which the sky is overcast or cloudy much of the time is therefore a poor one for corn, even though the temperature is suitable and the rainfall sufficient.

50. THE CLIMATIC REGIONS OF THE UNITED STATES AND THEIR CHARACTERISTICS

THE LESSON FORECAST

1. The climate, vegetation, and crops of the humid subtropical regions.
2. Agriculture in a region with a moist continental climate.
3. The location and the cause for the semi-arid Great Plains and why the region is a great grazing and dry-farming area.
4. The location of the arid interior plateaus.
5. Crops that thrive best in the dry subtropical region, and how they are grown.
6. The climate of the mild-winter, mild-summer region.

Reasons for dividing the country into climatic sections. In order to understand why people live in certain regions and why they carry on certain activities there, we need to know how climate and weather conditions either help or hinder them in their work. For

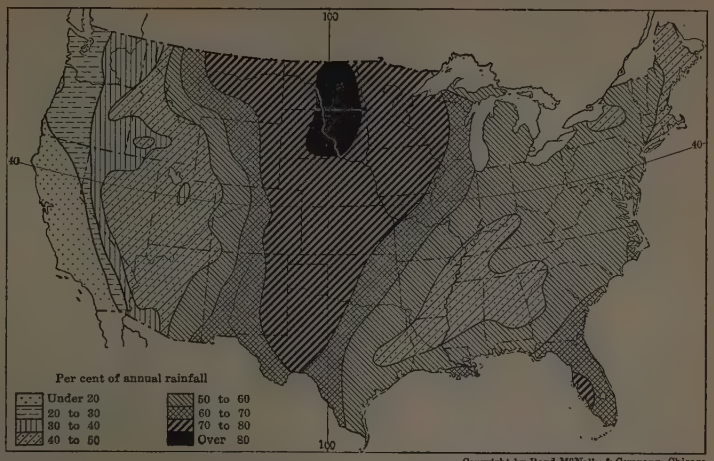

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Fig. 103. The average annual rainfall during the growing season. Where does the largest percentage of rain come during the growing season? Where does the smallest percentage come? How is the rainfall distributed throughout the year in your home region?

In regions where most of the rainfall comes during the winter, what is sometimes done to save the water for the crop? After a careful study of the map, compare it with Fig. 98. Can you explain in detail why there is such a variety of agricultural products in the United States?

convenience, therefore, the country is divided into a number of large climatic sections, each one of which has certain outstanding characteristics that help us to explain the conditions found there.

The humid subtropical section. The peninsula of Florida and that part of the Coastal Plain which borders the Gulf of Mexico form what is known as the subtropical section. Although in this area, except in the extreme tip of the peninsula, there may be short periods of cold weather, the winters on the whole are never cold. Along the Pacific coast of the United States and in this region no month has an average temperature below freezing.

The summers of the subtropical section are hot and rainy, but there the autumns are drier. In certain localities of this section during the hottest part of the season severe thunderstorms with heavy rainfall occur almost every day.

Vegetation in the subtropics consists of thick-leaved trees like the evergreen oak and laurel, as well as many pine trees. The growing season is, of course, long and favors the raising of cotton, rice, sugar cane, and citrus fruits. For such products as early vegetables the growing season is long enough for two crops to mature in a year. This makes it possible to raise one crop to sell in the north before northern-grown vegetables are ready for market, and another crop for home use when northern markets are filled with products raised near by.

Much of the subtropical area is a favorite winter resort for people who do not like the severe northern winters. Especially is this true of southern Florida where warm-weather sports may be enjoyed throughout the winter months.

The moist continental section. North of the subtropical section, and extending west to approximately the 100th meridian, is a region marked by cold winters and warm, moist summers. This is sometimes called the maize or corn climatic section because anywhere here, except in the extreme north, this plant will mature seed. In this vast region, the great food-producing center of the country, we also find our greatest industrial development and our most densely populated areas (Fig. 104).

Throughout most of this region the heaviest rainfall comes during the summer. Here winter weather is varied by a succession of stormy and fair-weather areas (Figs. 99 and 100).

The higher mountains and the most northerly portions of this region have a heavy

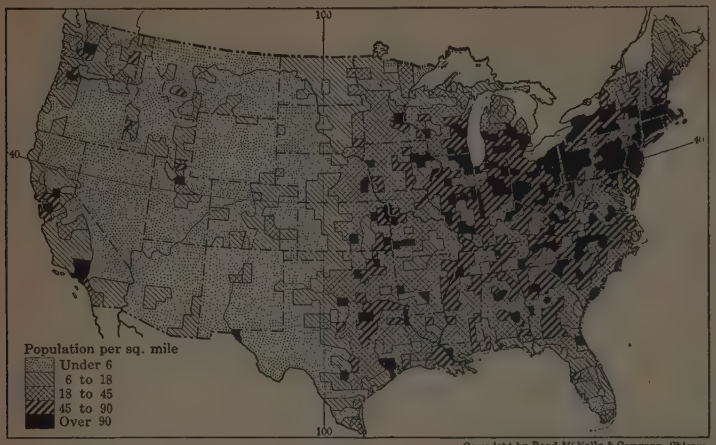

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FIG. 104. **Distribution of population in the United States.** What natural resources and what surface and climatic conditions help to explain the great density of population in the eastern half of the country? (Figs. 86, 94, 95, and 98.)

Can you tell why the population is so scattered throughout the West? Name the chief industries of the thinly populated western regions.

Find the density of population in your own state. (Consult Appendix, p. 434). How does it compare with the most densely populated states? the most thinly populated states?

snowfall and a long dormant season which favors lumbering and the development of numerous winter sport resorts. During the winter, rivers and lakes are frozen and water transportation ceases. This means that the Great Lakes and Hudson River routes are closed for a number of weeks, or months, each winter.

Pines, spruces, and other cone-bearing, or coniferous, trees thrive in the cool, moist climate of the northern section, and these great forest areas are sources of lumber and paper pulp.

South of the coniferous forests are the broad-leaved hardwood forests of maples, ash, oak, walnut, and hickory, which furnish a supply of lumber for tools, furniture, and building purposes. As we go westward from the Appalachians, the forested lands gradually decrease and grasslands become more extensive, forming the prairies of Illinois and neighboring states. As we go westward from the Mississippi River, we find that the grass becomes shorter and the country drier.

Because grass grows luxuriantly in every open area through the region, this section is often called the Temperate Forest and Grassland Area.

The semiarid Great Plains or steppe region. West of the 100th meridian and extending to the eastern foot of the Cordilleran Highland is a dry region, but one not dry enough to be a true desert. Here few trees are found except those bordering streams. Rain falls in small quantities at certain seasons, but the growing season is dry. The winters here are colder than anywhere else in the country, with many days at a time when the thermometer remains far below zero. Because of the dryness the days in summer are hot and the nights cold. This is a steppe region quite similar to the steppes which reach for great distances through the eastern part of Europe.

Here, however, is the great grazing region of the country, agriculture being followed only where irrigation or dry farming is practiced. In dry farming the ground is kept stirred or harrowed during one year in order to keep the water in the soil from being evaporated. The second year, by making use of two years' rainfall, a crop of grain can be raised.

The arid interior plateaus. The greater part of the Plateau and Basin Region is much drier than the Great Plains or steppe region (Figs. 86 and 98), although some parts of that region are really steppes. Throughout much of the region, especially in the lowlands, people live in the oases of the desert areas where there is water enough

for crops to thrive. In Arizona the climate is so warm that dates and similar desert crops are grown. The population of the region, however, is sparse, and several states, although large in size, have only a small number of inhabitants.

In the higher lands, where it is more moist, forests thrive, and here are found some of the largest national forests.

The dry subtropical region. The southern Pacific coast of the United States (Figs. 497 and 498), like the humid subtropical region, has hot summers and warm winters with little or no frost. This region, which includes the lowland portion of California, is sometimes spoken of as having a Mediterranean climate because its climate is so much like that of the Mediterranean coast of Europe. Sometimes it is called an olive climate because deep-rooted olive trees thrive in this land of dry summers and moist winters. Like Florida, southern California is a citrus-fruit area and a winter resort. Crops that in the East must be grown during the winter months in hothouses or greenhouses are here grown out-of-doors. This region supplies many of the fresh vegetables found in eastern markets during the winter (Fig. 102).

The mild-winter, mild-summer region. The northern Pacific coast is wet and warm in the winter, while the summers, although much drier, are not too dry (Figs. 98, 497, and 498). Such a climate is a favorable one for the growth of trees, and here we find some of the most extensive, heavily forested areas of the country (Fig. 91). Outdoor occupations can be followed the year round, and because the harbors and the rivers are never frozen over, this is a good region in which to live and work.

The high western mountains. The broad Cordilleran Highland causes the winds that blow in from the Pacific to lose much of their moisture on its westerly slopes (Fig. 98). These well-watered sections are therefore densely forested (Fig. 82). In the Cascades and Sierras the snowfall is so heavy that the railroads passing through these mountains have to be protected by miles of snowsheds which must be strong enough to bear great weights of snow.

Because of these conditions the mountain sections are thinly populated except where mining towns have sprung up. In favored valleys agriculture and grazing are carried on. Among the lakes and in the open parks and scenic regions are summer resorts, but the season for summer visitors often is very short. In Yellowstone Park the season extends from about June 15 to September 15, but snow often falls any time after September first.

Summary. In this brief sketch of the great regions of our country, we have seen how climate and surface features have helped determine the distribution of vegetation, of crops, and of people and their industries. We now have the necessary background for a study of the several groups of states, beginning with those which lie along the Atlantic coast.

SOME RELATED PROBLEMS

1. When the north winds blow in your locality, how does the weight of the air north of you compare with its weight to the south? What conditions would give a west wind?
2. Is the region where you live one with variable winds? Explain your answer.
3. Why do many people go to California or Florida to spend the winter?
4. Where in the United States could you go to escape the hot weather of summer?
5. A doctor advises a patient to go to a region of warm, light, dry air. Where can such a place be found in our country?
6. Describe the changes in the direction of the wind at your home as a cyclone or storm area passes north of you.
7. Name five domesticated plants growing in your community that could not survive without man's care.

THE NEW ENGLAND STATES

51. WHAT THE MAPS, TABLES, AND GRAPHS SHOW

Problems:

1. Why is the population of New England unevenly distributed? (*a*) Where are the areas of greatest and least population? (Fig. 104.) (*b*) Which states have the largest number of cities? (*c*) What are the leading occupations in northern and in southern New England?
2. Why is manufacturing especially centered in southern New England? (*a*) Which states can most easily carry on trade by water with New York City and other Atlantic ports? (*b*) Which states have the best railroad connections to the West and to the coal and iron-ore regions of Pennsylvania?
3. Why do many people visit New England in summer? (*a*) Why do people like to visit the seashore or the mountains during the summer? (*b*) What large centers of population lie near the coast of New England? (*c*) Along what shores would the temperature of the water be most agreeable for sea bathing? (*d*) What part of New England is best supplied with small harbors that can be used as centers for boating and yachting? (*e*) Which of the highland sections are most accessible? (*f*) Where are the largest forests of evergreen trees found? (*g*) Which portion of New England would you prefer to visit on a summer vacation? Give the reasons for your answer.
4. Why is New England a fishing section? (*a*) How far from Eastport, Me., and Boston is the Grand Bank? (Figs. 78 and 254.) (*b*) Why is Boston a large fish market? (*c*) Which is more easily reached from New York by rail, Boston or Eastport? (*d*) How must freshly caught fish be packed for shipment? (*e*) What material secured during winter is used to preserve fish for shipment? (*f*) Why must freshly caught fish be shipped by express or fast freight?
5. How do the rainfall and temperature graphs help you to understand the climate of New England? (Fig. 105.) (*a*) The vertical black lines on the graph show the average amount of rainfall for each month of the year. During what month does Burlington get the least precipitation? during what month the most? (*b*) The curved line crossing the graph shows the average temperature for each month. How does the January temperature in Burlington compare with that of July? (*c*) How does the temperature graph show that in Burlington the February precipitation probably takes the form of snow?

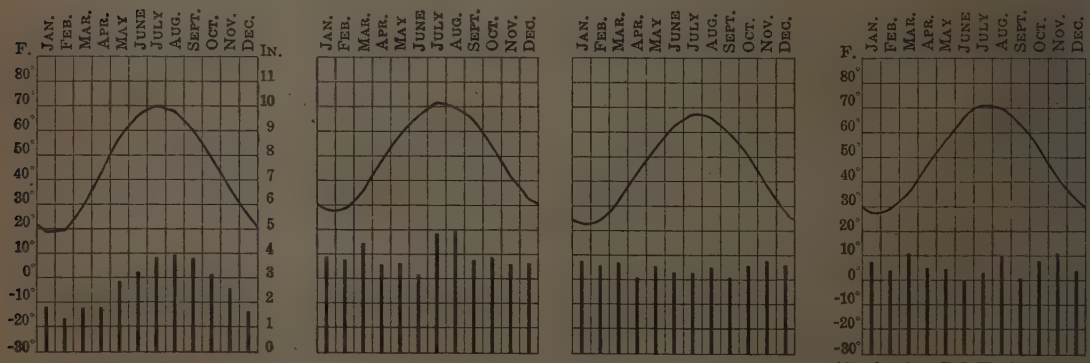
F.
JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT. OCT. NOV. DEC.
IN.
80° 70° 60° 50° 40° 30° 20° 10° 0° -10° -20° -30°
11 10 9 8 7 6 5 4 3 2 1 0
Burlington, Vt.
Alt. 268 ft. Temp. 45.1°
Rainfall 31.56 in.
New Haven, Conn.
Alt. 197 ft. Temp. 49.6°
Rainfall 47.19 in.
Portland, Me.
Alt. 107 ft. Temp. 45.5°
Rainfall 42.51 in.
Boston, Mass.
Alt. 125 ft. Temp. 49.6°
Rainfall 40.60 in.
After data from U. S. Weather Bureau

FIG. 105. The average annual temperature and rainfall for four of the leading New England states

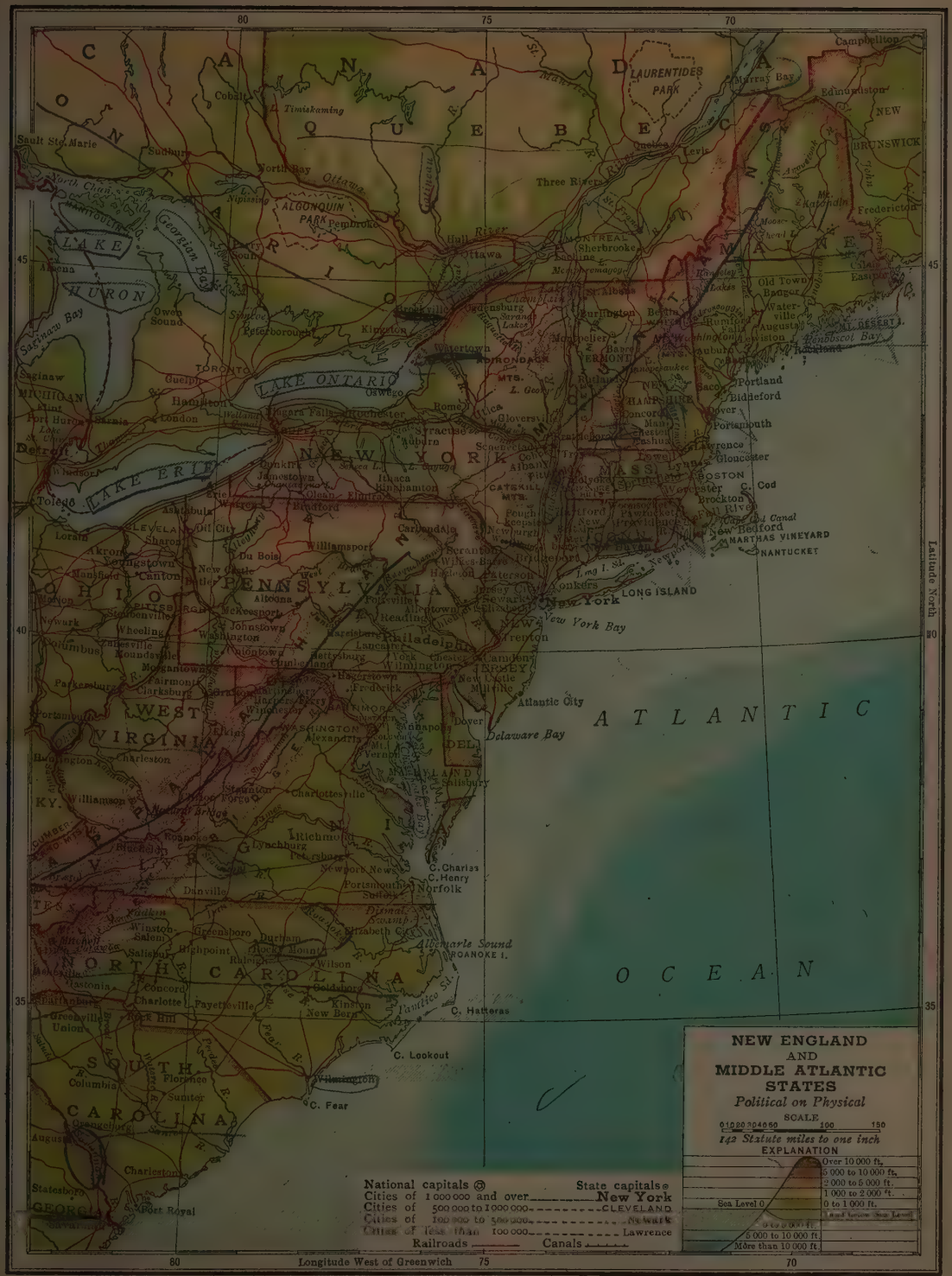

FIG. 106. A Map of New England and the Middle Atlantic States

(*d*) Which one of the four cities shown in the graph (Fig. 105) has the warmest winter and which the coldest winter? Give reasons for your answer. (*e*) Which city has the greatest variation in rainfall and which the least? (*f*) Which city has the greatest annual rainfall and which the least?

Questions:

1. How can one travel by water from the city of Burlington, Vt., to the sea?
2. What New England states border Canada?
3. Which states border the Atlantic Ocean?
4. Which states border New York?
5. Locate four well-known lakes of New England.

Minimum essentials in location:

Be able to locate the following on an unlettered map: All the New England states and the most important city in each; three lakes; two mountain groups; five rivers; one canal; two bays; two capes; three islands; the following cities: Lowell, Lawrence, Fall River, Worcester, New Bedford, Bridgeport, Bangor, Manchester, Lewiston, Hartford, Rutland, Nashua.

52. HOW NEW ENGLAND BECAME A MANUFACTURING REGION

THE LESSON FORECAST

1. How the people of the Plymouth colony secured food, clothing, and shelter.
2. How manufacturing began.
3. How the glacier changed the surface and soil of New England.
4. The part forests played in early manufacturing and how they are used today.
5. The present source of power and raw materials.
6. Kinds of manufacturing best suited to New England.
7. How the products of the industries are marketed.

The site of the first settlement. When the Pilgrims reached the shores of New England just before Christmas in 1620, they anchored their little vessel in a small harbor that was protected from the high waves of the sea. They landed on a little beach at the edge of a pine forest. The main street of the settlement was laid out near a small stream which gave them an abundant supply of good water. The pine forest furnished logs for their houses and for the fort they built on a little hill near by (Fig. 107).

How the first settlers secured the necessities of life. The following spring the settlers cleared small plots of ground and planted corn. The seed corn was furnished them by the Indians, who also showed them how to plant it. The wild animals in the near-by forests furnished them with a part of their food. Fish could be easily secured from the sea, and at low tide clams could be dug from the flats in the shallow harbor. Thus the settlers depended upon the resources near at hand for their food and for most other necessities.

How manufacturing started in New England. From this first small settlement has grown the New England of today with its more than eight millions of people, four-fifths of whom live in the three southern states of the group. In its early history the settlers of New England were chiefly engaged in agriculture, lumbering, boat building, or fishing, because these were the natural occupations to follow. A little later came manufacturing, the occupation for which this section is now best known. All industries were first carried on in the home or in many small centers which soon became thriving cities.

The first manufacturing in New England was the grinding of home-grown corn and wheat into meal and flour. This was done by water power, with which New England with its many swift-flowing streams is well supplied (Figs. 37 and 512). The streams of New England are short and swift. Because their sources are high up in the mountains, only a dam is needed to check the water and put it to work (Fig. 108).

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FIG. 107. **How Plymouth looked in 1622.** This small group of log cabins was the first settlement made in New England. The governor's house stands in the stockade at the foot of the hill to the right. At the left lies the harbor. In the distance on the hill is the fort. Why was it built on a hillside?

Notice the field of grain in the foreground. What kind of grain do you think it is? Do you think the people of this small settlement could supply all of their own needs?

Courtesy American Woolen Company

FIG. 108. **A great dam in the Merrimack at Lawrence, Mass.** This dam, which is 900 feet wide, furnishes power to drive more than a million spindles and looms. Most of the factories, on both sides of the river, turn out woolen goods, but there are also cotton and paper mills.

Look for Lawrence on the map (Fig. 106). How do the lakes in the highlands to the north help make the Merrimack more useful to Lawrence? Can you tell where all the raw wool used in the factories here comes from? the raw cotton? the wood pulp?

How glaciation has helped manufacturing. The drainage features and many of the surface features of New England are due to the interesting fact that at one time this region was buried beneath a great mass of ice—a continental glacier similar to the one now covering Greenland.

This mass of ice moved slowly over the country just as the snow in a snow bank moves slowly along downhill. As it moved along, the glacier scraped off the soil and loose rocks from the higher sections and carried them toward the edge, where they were left as the glacier slowly melted. Thus the lowlands became covered irregularly with rock material. After the ice had melted away, soil again began to form on the new surfaces which the glacier had scraped bare. Water filled the hollows and formed lakes. Many of these lakes lie in chains, connected by streams that drained off the water as the lakes overflowed. The larger lakes, because of their beauty and agreeable summer climate, are popular summer resorts.

Many of the New England rivers are really nothing but a succession of small lakes. In some of the streams there are rapids and waterfalls. These waterfalls furnish power for manufacturing, but water power is not used so much today as it was in earlier days.

How forests help manufacturing. Chief among the industries of New England is

manufacturing. Originally this industry developed where water power was to be had, or was carried on as a winter occupation on the farms and in the small villages. The northern forests furnished raw materials for the shipbuilding which was carried on in many of the small harbors along the coast from Maine to Connecticut. The hardwood trees furnished wood for tools, household utensils, and furniture, and for a long time many woodenware factories thrived. Certain kinds of northern forest trees furnished bark for tanning the leather used in the small shoe factories.

Much of New England is even now forest covered, but most of the timber has already been cut. Some is still cut for lumber each year, and wood pulp for paper-making is a thriving industry, with Maine the leading state (Fig. 109). All the newspapers of the many cities require a constant supply of paper, and the forests near at hand in New England, New York, and Canada furnish the wood pulp, the raw material needed for the making of paper. Today the greater part of the lumber for building and manufacturing must be brought from the forests of the South or else from the far West or from Canada.

The accessibility of coal and raw materials. Gradually, as coal came to be used for fuel and as markets in distant parts of the country were developed, manufactures began to be centered more and more at locations favorable for both water and land transportation. Cotton, wool, leather, copper, and other raw materials upon which New England manufacturing depends, must all be brought from a distance, some even from foreign countries. Hence today the larger manufacturing centers are either near good ports or at points where there are good rail connections. These make possible the importation of raw materials and fuel and the exportation of finished goods to other parts of the country, especially to the port of New York.

Types of manufacturing found in New England. The manufacture of boots and shoes, and of cotton, woolen, and worsted goods still ranks high in the places where it first developed, because these industries were well located. Massachusetts ranks first in the manufacturing of boots and shoes (Fig. 110). New Bedford, Lowell, Lawrence (Fig. 111), and Fall River, Mass., Providence, R. I., and Manchester, N. H., are the chief textile cities. In spite of the fact that the manufacturing of cotton is developing rapidly in the South, where raw materials and fuel are more easily secured, it is still the most important industry of New England (Figs. 112 and 113).

New England is a part of the great manufacturing area that extends southward to Maryland and westward beyond Chicago. In some kinds of manufacturing it must now compete with new sections where certain conditions are more favorable. Hence most

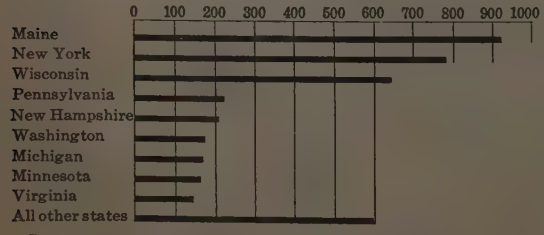

FIG. 109. **Production of wood pulp in the United States.** This graph shows in thousands of tons the rank of the states which lead in the wood-pulp industry. Why do not the southern and western states produce more wood pulp? Why do some woodlands produce wood pulp but not lumber?

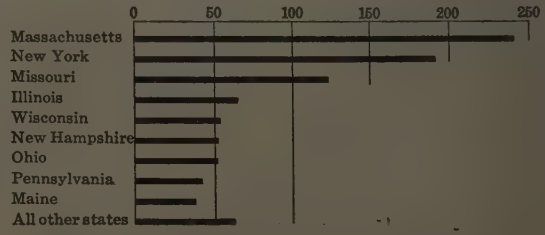

FIG. 110. **Production of boots and shoes in the United States.** Here is shown the rank of the states leading in the boot-and-shoe industry in millions of dollars. What raw materials are used? What advantages have Milwaukee and St. Louis in the manufacture and marketing of leather goods?

New England factories manufacture goods which require special skill in the making and which, although valuable, are not bulky. Some of these products, such as brass goods, hardware, and tools, are mostly manufactured in Connecticut.

In northern New England, where water power is abundant (Fig. 512) and raw materials may be had easily, paper making from wood pulp is a leading industry (Fig. 109).

Manufacturing and the food supply. Manufacturing on an extensive scale requires an abundance of laborers for the factories and mills. This means a dense population that must be housed and fed. Hence one of the greatest problems of any large manufacturing district is how to secure a sufficient food supply for the people at reasonable prices. Business always depends upon agriculture, and this is one reason why agriculture ranks next in importance to manufacturing in New England.

53. THE IMPORTANCE OF AGRICULTURE IN THE NEW ENGLAND STATES

THE LESSON FORECAST

1. Why the type of farming has changed from that of early days.
2. What crops are profitably grown.
3. Why dairying is one of the chief occupations.
4. How the large cities depend upon agriculture.

Ewing Galloway

FIG. 111. **The end of the day at a woolen mill, Lawrence, Mass.** All these people are employed in the great mill beyond the bridge. Many of them are foreign-born.

Near by along the river banks are three other woolen mills. Where do these mills secure their raw materials? Why are these materials brought here to be manufactured? Where are the markets for the finished products?

Why is Lawrence known as the "worsted city" of the United States? What is the rank of Massachusetts in the production of woolen and worsted goods? In what ways do you think the people of Lawrence are dependent upon other parts of the country?

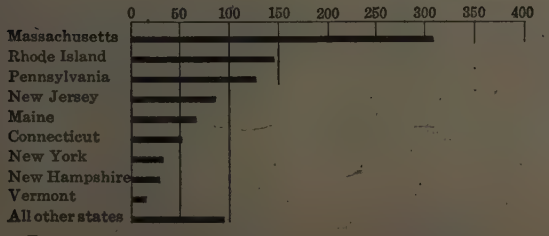

FIG. 112. **Production of woolen and worsted goods in the United States.** The rank of the states which lead in the manufacture of woolens and worsted goods is shown in millions of dollars. Can you explain why New England leads in this industry?

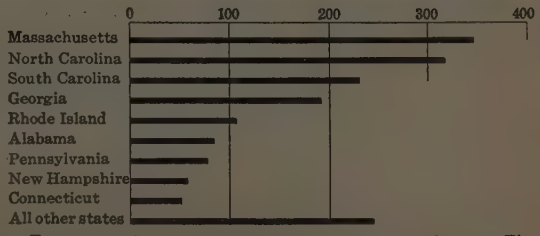

FIG. 113. **Cotton manufacturing in the United States.** The value of cotton manufacturing in the leading states, in millions of dollars. Compare the output of the New England states with that of the southern states. Which region has the advantage as to raw materials? as to labor supply?

Courtesy Publicity Department, Burlington, Vt.

FIG. 114. **A New England landscape.** This is a scene in western Vermont. The low, forested hills in the distance were worn down by the great glacier which once covered much of North America. Of what mountain range are these highlands a part? (Fig. 106.) Why does little of the land seem to be under cultivation? What occupation do you think might be carried on to advantage in this region? Why do you think this would be a pleasant place in which to pass the summer?

Where farming is carried on. Except for the area near the coast and the lower portions of the larger river valleys, New England is a rolling country with many steep and abrupt slopes. In the highland areas of Vermont (Fig. 114), New Hampshire, and Maine, especially in the Green Mountains and White Mountains, the surface is rugged. The rivers that cut through the mountains flow through narrow valleys. The upland sections, because of the work done by the great glacier, have a thin soil, better adapted for forests than for crops. This accounts for the large proportion of forested area in this group of states and for the small amount of farming carried on in the more hilly sections. The valley and coastal lowlands are best for agriculture, although where the slopes are gentle, farming is successfully carried on in much of New England. In fact the hillsides over a large part of New England are covered with farms. These farms are small because the slopes are usually so irregular and steep that the larger farming implements cannot be used. When the region was first settled, rock bowlders left by the glacier were scattered over the hilly section. Before the land could be farmed, these bowlders had to be removed, and many of them were built into stone fences or walls which add a picturesque touch to the scenery of the New England hills.

Why cereals and meats are imported. In early days New England farms yielded all the wheat, corn, meat, and other products the people needed for food. But today wheat, corn, and meat are produced mostly in our western states where the conditions are more favorable for them. New England agriculture is devoted, therefore, largely to the raising of certain special crops for which conditions are most favorable, and to products such as milk, which must be produced near the markets.

What crops best meet conditions in New England. All over New England the climate is too moist for growing wheat profitably.

From Bureau of Economics, U. S. Department of Agriculture

FIG. 115. **Harvesting potatoes in northeastern Maine.** Although they occupy only 4 per cent of the land under cultivation, potatoes make up 20 per cent of the value of all crops in New England. In the raising of potatoes the Aroostook District in northeastern Maine leads the country. They are grown in rotation with clover. Can you give the reason why?

Contrast this picture with Fig. 8. What differences can you point out? Why do you think it is more expensive to raise potatoes than wheat or corn?

In northern New England the growing season (Fig. 102) is too short for corn to mature, but is long enough and moist enough to make raising potatoes a success. Potatoes are grown in small quantities on almost every farm, but in northern Maine there is a section that is known far and wide for the great quantities of potatoes raised (Fig. 115).

In much of New England both soil and climate favor the growing of apples. Peaches are grown successfully in the warmer southern states of this group, and here a special area is devoted to the raising of tobacco. Near all the large cities are truck farms for raising vegetables that must be marketed quickly.

Why dairying is a successful industry. Throughout most of New England dairying is an important industry, and milk is sent daily by express trucks or trains to many cities. In the more northern sections, too far from the industrial centers for milk to be shipped successfully, butter and some cheese are made. These products can be marketed at any time. Dairy farms must produce not only a great abundance of hay, for which New England soils and climate are especially favorable, but also other food crops for animals.

It takes a large area of land to yield enough food even for one cow, and so in summer in a New England dairy region one sees large pastures and fields of grass as well as other crops. This is one of the reasons why people in such a region cannot live very near together. With the exception of those farmers who grow such crops as vegetables, tobacco, or fruit, the farmers usually need large areas of land in order to secure a living for their families.

SOME RELATED PROBLEMS

1. Why is lumber for building purposes shipped into New England from states farther west?
2. Why are so many large towns located on the Connecticut and Merrimack rivers?
3. Why does New England specialize in the manufacturing of textiles and leather goods, when all the raw materials have to be imported?
4. Why should New England manufacture clocks, watches, jewelry, and firearms?
5. Find out why it is desirable to have paper manufactured near the places where it is to be used.
6. Why was shipbuilding an early New England industry?
7. Why can the land of New England be used to better advantage for dairying than for growing grain?
8. Try to learn whether forests aid the boot-and-shoe industry.

Ewing Galloway

FIG. 116. **Unloading a cargo of fish at Boston.** This little schooner has just come in from the Grand Bank, loaded with fish. By what kind of power is the boat evidently propelled?

In the center of the deck of the boat you can see three large fish hanging from a rope. They are halibut, which are being swung ashore with the aid of a pulley. Can you find out how much a large halibut sometimes weighs? How are halibut caught? What modern invention makes it possible to ship fresh fish far inland? In what form are halibut brought to your home market?

54. OTHER SIGNIFICANT OCCUPATIONS IN NEW ENGLAND

THE LESSON FORECAST

1. Why strong rocks are found on or near the surface in highland regions.
2. Where quarrying is carried on in New England.
3. Why fishing continues to be a thriving industry in New England.
4. The regions where attractive scenery is to be found.
5. Places of historic, literary, and educational interest.

Reasons for the quarrying industry. The sun, wind, rain, frost, and ice are always at work wearing away rocks. It is their work that produces the fine rock particles which make so many streams muddy, especially after heavy storms. Rocks found in highland areas, or that stand out as bold capes facing the ocean, must, therefore, be hard and resistant, or as we may say strong, because they have not yet been worn down. Such rocks are to be found in the highlands of New England and along the shores of Maine. Many of these strong rocks are valuable for building purposes, for monuments, or, when ground up, for road building. The quarrying of granite is carried on especially in Massachusetts, Vermont, and Maine. Vermont also has great marble and slate quarries, and road materials are quarried in several states. Since concrete is now so much used in many ways in building, the demand for granite has decreased.

Concrete can be made wherever sand is abundant and cement is available. New England must import cement, but the glacier left large deposits of sand that can be used.

Why fishing is carried on in New England. Colonial New England, with its many small harbors and resources for shipbuilding, early became a notable fishing section. Due to the short distance from the fishing grounds of the Grand Bank (Fig. 78) this occupation continues to be an important one, with Gloucester, Mass., the center for the preserving of fish, and Boston the great fresh-fish market (Fig. 116). Certain fish are cured by smoking or salting, and are shipped far and wide. Some kinds to be eaten fresh are shipped from the fishing ports only to the near-by cities. Shell fish, such as clams and oysters, are found in great quantities along the New England shore. Oysters thrive best where the water is not too cold and where fresh water from streams constantly reaches the beds. For these reasons

Ewing Galloway

FIG. 117. **The beach at Gloucester, Mass.** The part of the beach shown in the picture has been made a public park. Why do you think there is special need for many such places of recreation in southern New England?

How many different kinds of boats can you find in the harbor? For what purposes do you think each one is used? What other industry do you think may be important in Gloucester besides that of caring for the people who seek recreation at the seashore?

Long Island Sound is a center for oyster farming, as the industry is called.

Why many tourists visit New England. As has already been said, New England is an ideal vacation land, partly because of the beauty of its scenery and partly because of its agreeable summer climate. It also owes much of its popularity to the fact that it is easily reached from the many large eastern cities. Some of the sandy beaches near these cities have been made into parks. There are many summer cottages and hotels along the shore line facing the open ocean or the quieter waters of the large bays (Fig. 117). A small area on Mount Desert Island has been set aside as a national park.

Among the mountain and highland areas also are summer resorts, and there is much canoeing upon the lakes and rivers, especially in the northern states. Thus we see that the work of the glacier has helped the laborer whether he is at work in a factory, or at play, or touring the country to see the scenery.

In New England there are many places of historic interest which are visited annually by thousands of people. Among them are Concord and Lexington where were fought the first battles of the Revolution, Boston with Faneuil Hall, known as the "Cradle of Liberty," Plymouth (Fig. 107), the site of the first settlement, and many other old towns.

Here also are the homes of Whittier, Longfellow, Lowell, Hawthorne, Emerson, Thoreau, Alcott (Fig. 119), and Aldrich, to which come every year many visitors interested in the writings of these authors.

Caring for summer visitors is, therefore, an occupation that gives employment to thousands of people who work in hotels, care for summer homes, or raise the food or catch the fish needed by these visitors.

55. CITIES AND PROBLEMS OF THE NEW ENGLAND REGION

THE LESSON FORECAST

1. The chief advantages of Boston's location and its one great handicap.
2. Why the river valleys of New England contain many large cities.
3. Why all the harbors of New England are not equally good for trade.
4. Some industrial problems New England is facing.
5. How agriculture may be carried on more efficiently.

Why Boston is the leading city. Boston, the largest city, is sometimes called the "Hub" of New England, for railroads radiate from it in all directions (Fig. 118). These roads carry vast quantities of food, raw materials, and manufactured goods. Boston is also the chief port for all this section, with the exception of certain parts of southern New England.

FIG. 119. **The home of a famous New England family.** This fine old house at Concord, Mass., was for many years the home of Louisa M. Alcott and her family. It was known as Orchard House.

Each year many people visit this place to see the home of the author who wrote *Little Women*, *Little Men*, *Rose in Bloom*, and many other stories dearly loved by boys and girls. People are also interested in Orchard House because of Louisa Alcott's father, Bronson Alcott, who was a writer of note. See if you can find pictures of the homes of Longfellow, Whittier, Lowell, and Hawthorne.

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FIG. 118. **Boston and towns of the outlying regions.** Why is Boston Harbor considered one of the finest harbors in the country? Of what body of water is Boston Bay a part? (Fig. 106.) Why do so many railroad lines end here?

Boston is situated upon a good harbor and about it are grouped many large cities, most of which are engaged in manufacturing (Fig. 118). It has become the greatest wool and leather market in the country because it is the port which receives the raw materials used by near-by factories. Woolens and leather goods are still made, because the factories were established here. The region profits by the fact that the industry got an early start in this type of manufacturing.

Although Boston is the natural trade center for a large part of New England, it is not well situated for trade with the great western section of the country. To reach the city, railroads must cross the highland barrier in western Massachusetts. Hence freight between Boston and the West cannot be handled as cheaply as it can along the sea-level route of the Hudson River which connects New York and the West.

Other important cities. The second city in size in New England is Providence, R. I. (Fig. 120). It is favorably situated on the best rail route from Boston to New York and the South, and at the head of navigation on a large bay. Worcester, Mass., is a manufacturing city which began as a small factory town dependent upon the water power to be had there. In the Connecticut River valley with easy rail connections to the North, the South, and the East are found many large cities, among them Springfield, Mass., and Hartford, Conn. Hartford stands at the head of navigation on the Connecticut. New Haven, New London, and Bridgeport

Ewing Galloway

FIG. 120. **The water front at Providence, R. I.** Upon what bay is Providence located? The arm of the bay shown here is called the Providence River. What do you think are the advantages of this city's position far up at the head of a large tidal bay?

How many things can you find in this picture which show that Providence is a large commercial and industrial city? Does the map show why it is a great distributing center? Why do you think brass and silverware are manufactured in Providence rather than railway cars and steamships?

are all ports along the Connecticut shore with excellent rail connections (Fig. 106).

The chief cities of Vermont are Burlington and Rutland, both on the rail route between Canada and New York City, the former being also the most important port on Lake Champlain. The principal cities of New Hampshire are Manchester and Nashua, industrial centers on the Merrimack River, and Portsmouth on the coast. Farther down the Merrimack are the manufacturing centers of Lowell and Lawrence, Mass. Also in Massachusetts are Brockton and Lynn, both centers of the boot-and-shoe industry.

The largest city of Maine is Portland (Fig. 121), which has a fine harbor and is also an important railway center. Augusta, Bangor, and other cities located at the head of navigation on the principal rivers have developed manufacturing because of their water power and excellent transportation facilities.

Looking ahead. We have seen how manufacturing, especially in the southern section, has become the leading industry of New England.

In New England many things have to be considered. Can this section with its dense population and many large cities continue to secure food supplies for its population at reasonable prices? Will new factories spring up in other sections, nearer to where food can be raised more cheaply, and will these factories secure the markets now supplied from New England factories? Will the cotton mills of the South become more flourishing than the northern mills? The southern mills are nearer the raw cotton and can secure fuel and labor more cheaply. Since the winters in the South are not so cold as in the North, it costs the workers less to keep comfortable, while food can be obtained more cheaply. With all these favoring advantages, is it not possible that the South may take the lead in the manufacture of finer textiles as it already has in that of coarser textiles?

Can New England mills, in spite of the high cost of food, raw materials, and power, maintain their industries by manufacturing fine-grade goods which require highly skilled laborers? And will its nearness to the great port of New York help this section to keep the lead in trade with foreign markets?

Industry always depends upon agriculture. Can New England farms by better methods produce a larger amount of food without increasing the cost to the consumer? Can milk and eggs be produced and fruits and vegetables raised in sufficient quantities near

Courtesy Chamber of Commerce, Portland, Me.

FIG. 121. **The state pier, Portland, Me.** Portland has a fine natural harbor. It also has the advantage of being located nearer Europe than any other port on the east coast of the United States. Prove this statement by measuring the distance on a globe. During part of the year much Canadian wheat is shipped to Europe from Portland. What season of the year do you think this is? Can you discover from the picture how the grain is brought to Portland?

the big city markets? Can New England agriculture be made to produce good food more cheaply than it can be brought from a distance? And at the same time can farming remain a profitable occupation in this group of states?

Is it possible to make New England a still greater resort for summer tourists? Can its lakes, mountains, seashores, and other attractive sections be made more widely known and draw more visitors from near-by cities and from other states?

SOME RELATED PROBLEMS

1. Why has fishing in New England long been an important industry?
2. Why has the food-fishing industry on the coast of New England increased, while that of whaling has declined?
3. In what poem did Whittier picture a New England winter?
4. Why should the forests of New England be preserved?
5. Why is it more profitable for Maine to specialize in growing sweet corn than to raise field corn for grain?
6. Why is it desirable for New England factories to specialize in manufactures that require the employment of highly skilled labor?
7. Why is New England's coast line irregular?
8. Why is marble used for the interior decoration of buildings while granite is used chiefly for monuments and building construction?
9. To what places in New England would you go for fishing, canoeing, hunting, mountain climbing, tobogganing, and skiing?

THE MIDDLE ATLANTIC STATES

56. WHAT THE MAPS, TABLES, AND GRAPHS SHOW

Problems:

1. Why should the Middle Atlantic states be a great industrial region? (*a*) Locate three flourishing cities in the Middle Atlantic states (Fig. 106) that are well-known ocean ports; three that are lake ports. What does this suggest with regard to the trade carried on by this group of states? (*b*) Which states furnish coal and iron ores for manufacturing? (Fig. 95.) (*c*) What river valleys are trade routes between the mining sections and the larger cities? (*d*) Besides coal, what are the other products of these valleys? (Figs. 91 and 138.) (*e*) Consult the Appendix and make a list of the ten largest cities in New York state. (*f*) Why are Buffalo and New York City the largest cities in New York?
2. Where would one expect to find summer resorts in the Middle Atlantic states? (*a*) Where are the highland areas found? Which of these areas are coolest in summer? Which lie nearest large cities? (*b*) In what state are the ocean beaches near large cities? From what cities may these be most easily reached? Why are these beaches better winter resorts than those of New England? (*c*) What section in this group of states would you prefer to visit and why?
3. Why is New York a larger port than Philadelphia? (*a*) Which city is nearer the deep water of the ocean? If a vessel coming in from the entrance of the bay to the city could steam only ten miles an hour, how long would it take to reach the wharves of New York? to reach those of Philadelphia? (*b*) Which city is nearer the coal mines and the steel-making centers of this region? (*c*) Which has the most large cities within a radius of 100 miles? (Appendix, pp. 434–435.) (*d*) Which city has the best railroad location, judged by the number of railroads and the grades which the roads have to follow? (*e*) Why is the Hudson River sometimes called the "Gateway to the Continent"? (*f*) What advantages in location has New York over Philadelphia? Philadelphia over New York?
4. How does the southern portion of this region compare in climate with the northern portion and with that of New England? (Figs. 105 and 122.) (*a*) What differences in temperature and rainfall do you note between Portland, Me., and Norfolk, Va.? (*b*) Give three reasons why Canton, N. Y., has a colder climate than either Norfolk or New York City. (*c*) Which city has the greatest range in

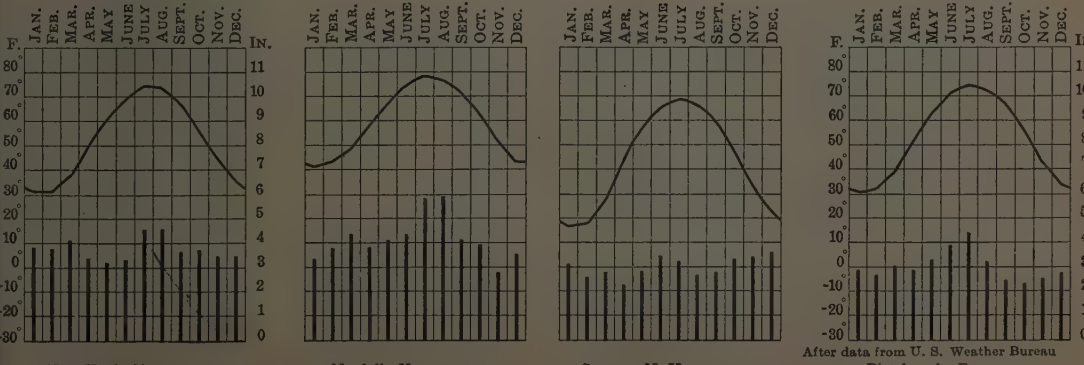

Jan. Feb. Mar. Apr. May June July Aug. Sept. Oct. Nov. Dec.
F.
In.
80° 70° 60° 50° 40° 30° 20° 10° 0° -10° -20° -30°
11 10 9 8 7 6 5 4 3 2 1 0
New York City
Alt. 54 ft. Temp. 52.3°
Rainfall 44.63 in.
Norfolk, Va.
Alt. 11 ft. Temp. 59.5°
Rainfall 49.54 in.
Canton, N. Y.
Alt. 304 ft. Temp. 44.0°
Rainfall 36.18 in.
After data from U. S. Weather Bureau
Pittsburgh, Pa.
Alt. 744 ft. Temp. 52.8°
Rainfall 36.35 in.

FIG. 122. **Average annual temperature and rainfall for four cities of the Middle Atlantic states**

temperature between January and July? Which has the least? Explain your answer. (*d*) Which city has the most rainfall and in which months is the rainfall the heaviest?

5. What advantages in location has Buffalo, N. Y., over Erie, Pa.?
6. Why cannot trade be carried on all the year round on the St. Lawrence?
7. Why are canals used to a less extent now than they once were?
8. Why is Long Island Sound an important trade route?

Questions:

1. What bodies of water border New York and Pennsylvania?
2. What are the largest rivers of this group of states?
3. What rivers and lakes form state boundaries?
4. What rivers drain into the Mississippi?
5. What valleys are followed by canals?
6. Of what state is Long Island a part?
7. What state of this group lies partly south of Connecticut?

Minimum essentials in location:

Be able to locate the following on an unlettered map of the Middle Atlantic states: the six states in this group and the chief city of each; Lake Erie; Lake Ontario; Long Island Sound; Delaware Bay; Chesapeake Bay; the Appalachian Mountains; Hudson, Potomac, St. Lawrence, Delaware, and Susquehanna rivers; District of Columbia, Washington, Canada; and the following cities: Buffalo, Jersey City, Paterson, Erie, Pittsburgh, Reading, Camden, Annapolis, Norfolk, Roanoke, Scranton, Trenton, Atlantic City, Rochester, Cumberland, Syracuse, Dover.

57. WHY THE MIDDLE ATLANTIC STATES LEAD IN COMMERCE AND INDUSTRY

THE LESSON FORECAST

1. Natural advantages of this group of states.
2. Why these states are densely populated.
3. Why the coast line furnishes good harbors.
4. Why the Hudson-Mohawk Valley is called the "Gateway to the Continent."
5. Why the location of New York City is a favorable one for trade.
6. Why many cities are found along the Fall Line.
7. Why the Coastal Plain and Piedmont Belt are good farming regions.
8. The Great Valley as a trade route and as a mining and agricultural region.
9. Resources and occupations in different parts of the Allegheny Plateau.
10. Why coal mining is a leading industry in Pennsylvania, Maryland, and West Virginia.
11. Three advantages this group of states has over New England.

Why this section became an industrial region. We have seen how New England grew into an important manufacturing center from small harbor villages such as Plymouth, Boston, and Salem. The story of the Middle Atlantic states is similar, for here, too, the first settlements were tiny shore villages, while today New York and Pennsylvania are the two leading manufacturing states of the country (Fig. 123). Although it is manufacturing with its associated business and trade that has made this group of states one of the richest in the country, yet we find that here, just as in New England, many other occupations are important. The Middle Atlantic states also have the further advantage of abundant mineral wealth, especially coal (Figs. 95 and 128), upon which not only manufacturing but also transportation depends for so much of its power.

The great manufacturing section of our country. The Middle Atlantic states, which extend from Canada to Virginia, are a part of the great manufacturing section of the country (Fig. 123). This section includes

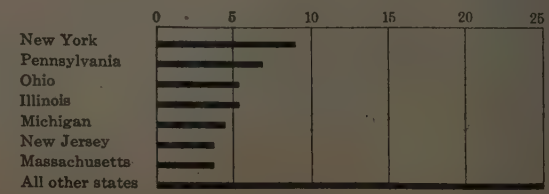
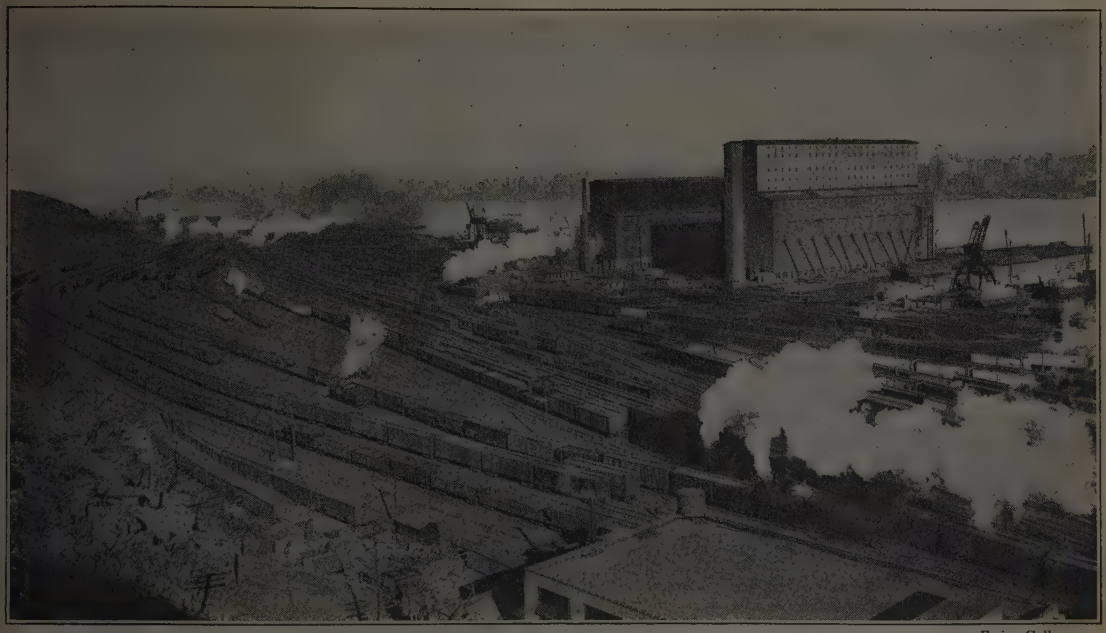


FIG. 123. The value of manufactures of seven leading states in millions of dollars



Ewing Galloway

FIG. 124. **The Weehawken Freight Yards.** These great yards, which are located just north of Union City on the New Jersey side of the Hudson, are the largest freight terminal in the vicinity of New York City. Can you tell what is stored in the two large buildings standing at the edge of the water? This freight terminal is at a point where its docks are easily reached by ocean-going vessels. What do you think are the advantages of its location?

not only this group of states but the three southern states of New England, and four of the North Central states, Ohio, Indiana, Illinois, and Michigan. Here, in about one-twelfth the area of the United States, lives more than two-fifths of its population; here, too, are found twenty-nine of the fifty largest cities of the country (Fig. 104 and Appendix, p. 434). In these twelve states the value of manufactured products is more than half that of the entire country (Fig. 123).

The good harbors of the Middle Atlantic states. A study of the map (Fig. 106) will show some of the reasons why the Middle Atlantic states grew rapidly in population and industry, and why the largest city of the country is found in one of them. In the first place, New York Bay, Delaware Bay, and Chesapeake Bay encouraged the building of a number of the first settlements of our country where they could be easily reached by water. These settlements developed far back from the ocean, yet they can be reached even by the large ocean vessels of today. Of these three bays, New York Bay is the most important because it has the best natural harbor.

New York Harbor. A harbor, to be a good one, must be easily reached from the ocean. New York City lies only a few miles from the capes at the entrance of a bay with a channel deep enough to accommodate the largest seagoing vessels. A good harbor must also have plenty of wharves where vessels may tie up and goods may be landed. New York City is built on an island, and the long stretches of shore along the Hudson and along Long Island Sound are occupied by great docks and wharves (Fig. 124). Thus many vessels can load or unload at the same time. Then, too, a good harbor must have plenty of room where vessels may anchor while waiting their turn at the wharves. Upper New York Bay provides a large anchorage. But above all else, a harbor, in order to grow

Ewing Galloway

FIG. 125. **In the valley of the Mohawk.** This is a view of Big Nose Gap fifty-two miles northwest of Troy. This gap is the gateway to the interior by way of the Mohawk Valley. Through it pass the New York State Barge Canal, the New York Central Railway, and a state highway. How do these three methods of transportation compare in respect to the time required and the expense and ease in moving goods?

What two great regions are connected by this gateway? What highland lies to the north of the Mohawk Valley? What highland lies to the south?

Can you find out when the Erie Canal was first constructed? Why was it necessary to continue it to Albany? Is it as important today as it once was?

in importance, must be easily reached from the interior of the country, for commerce depends not only upon foreign trade but also upon trade with far outlying regions.

Gateways to the interior. The three great cities Baltimore, Philadelphia, and New York (Fig. 106), located respectively on Chesapeake, Delaware, and New York bays, are all easily reached from the interior by rail routes which follow river valleys. The valleys of the Susquehanna, Potomac, and Delaware are all followed by railroads that not only reach the important mining regions of the highlands but also cross the highlands over into the rich sections of the Great Plain. The Hudson River, however, offers the best route, for the head of navigation on this river is 150 miles up from New York City, lying well within the interior of the highland formed by the Appalachians. This valley therefore gives a sea-level route for railroads to Albany, while the rest of the route from Albany to Buffalo takes advantage of the lowland at the north end of the Plateau, where the slopes are gentle. It is followed not only by the railroads but also by the Barge Canal which is the enlarged and deepened route of the famous old Erie Canal built over a hundred years ago. This great route has been rightly named the "Gateway to the American Continent" (Fig. 125).

Advantages of New York City's location. New York, located at the eastern end of this great trade and travel route, is also easily reached from the south and west by railroads following the valleys of the Susquehanna and Delaware. Because of the advantages of its location New York has grown faster than any other city in the Middle Atlantic states.

In early days when most of the people lived east of the Appalachian Mountains, New York had little advantage over the other cities. But as transportation improved and trade with the western states developed, the advantages of its location caused it to outstrip all other cities in the country in its growth and in the development of its manufactures, business, and trade.

H. Armstrong Roberts

FIG. 126. **A farm in the Middle Atlantic states.** This farm lies in the Piedmont Belt about twenty-five miles west of Philadelphia. What can you find in the picture which shows that farming in this region is a profitable industry? What do you think this farmer produces for market? This region, unlike New England, was not glaciated. What advantages for farming does it offer over New England? What great barrier lies west of the Piedmont? What region lies just east of the Piedmont?

The Coastal Plain and the Piedmont Belt. Consulting the map (Fig. 86), we find that the large cities from Trenton, N. J., southward nearly all lie at the inner edge of the Coastal Plain. In early days such a location was a special advantage for a city. For at the places where the streams flow from the narrow valleys which they follow through the Piedmont out into the tidewater bays and the inlets of the Coastal Plain there are waterfalls. These falls furnish water power for mills and, because of the advantages of their position at the head of navigation, the settlements made there naturally became centers of manufacturing and trade. The Coastal Plain, as we have learned, extends south from New York along the Atlantic and the Gulf of Mexico. Throughout the South Atlantic states, as in the Middle Atlantic states, falls occur at the inner edge of the plain, and along the Fall Line are many cities.

The Coastal Plain and Piedmont together form the lowland bordered on the west by the Appalachians. Together with the Plateau, these mountains formed a barrier (Fig. 129) that in early days was difficult to cross. The larger settlements therefore grew up in the Coastal Plain and the Piedmont, and for a long time most of the people of our country lived in this section. Agriculture was the occupation of the early settlers, and is still important in some sections of these two regions. The surface of the Piedmont, though in some places rough and steep, has many areas of rich soil and gentle slopes (Fig. 126). The Coastal Plain is, on the whole, much flatter and where the soils are good is especially well adapted for agriculture.

As the villages in these regions became more numerous, roads were laid out to connect them with each other and with the larger cities and ports. Later came the railroads,

"International Newsreel"

FIG. 127. **An anthracite mine in Pennsylvania.** This mine or colliery is located in Ashland, a thriving mining and industrial town in the southern section of the great anthracite district.

The large building in the center of the picture is the breaker where the coal is crushed, cleaned, and sorted. In the picture at the left may be seen the tipple and the chute from which the coal is loaded into cars on the track below.

Where do you think the coal mined here is used?

and now along these early routes from Washington to New York we find several important railroads which are part of through routes to the South and West. Today this lowland region is not only a great industrial section but a great highway of trade and travel.

The Appalachian Valley. As early settlements increased, people began to push westward. There is a low opening through the mountains in Pennsylvania. People soon found that through this opening they could reach the Great Valley or lowland which separates the mountains from the Allegheny Plateau to the west. This valley lowland is much broken by narrow ridges running in general in the same direction as the valley itself. In eastern Pennsylvania these ridges contain the hard-coal or anthracite deposits (Figs. 95 and 127) which furnish much of the coal used in eastern cities. The soils of the valley are usually rich, and naturally it is a region of farms, the most famous agricultural sections being the Lebanon and Cumberland valleys in Pennsylvania.

In Maryland, New Jersey, and New York the ranges of the Appalachians are not easy to cross because they form a highland with many steep slopes. The Great Valley has therefore become a north-south trade route which connects, as we have already seen,

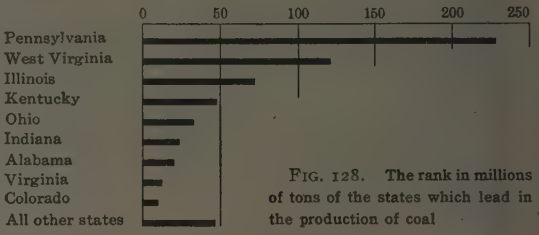


FIG. 128. **The rank in millions of tons of the states which lead in the production of coal**

with those river valleys that are gateways through the mountains.

The Allegheny Plateau. West of the Great Valley and occupying a large part of New York and Pennsylvania is the Allegheny Plateau. At the north and east along the Hudson and Mohawk valleys this Plateau ends in a series of steep slopes generally known as the Catskill Mountains.

Where not too high, the Plateau has a fertile soil, especially in the river valleys. In Pennsylvania and in western Maryland the Plateau contains rich deposits of soft coal which are extensively mined (Fig. 95). Because of both its hard-coal and its soft-coal deposits, Pennsylvania ranks as the leading coal-mining state in the Union (Fig. 128). Natural gas is also found in the rocks of the Plateau area of western Pennsylvania (Fig. 95).

Although the Plateau extends far to the south and everywhere contains coal deposits, coal mining is most important in western

Ewing Galloway

FIG. 129. **A heavily loaded freight train crossing the Appalachian Highland.** This train is making the Gulf Summit Grade on the Erie Railroad near Susquehanna in northeastern Pennsylvania.

Two 416-ton pushers are being used, one at the end of the train and one near the middle. There are three sets of driving wheels on each side of these locomotives. These give them a grip on the rails and great pushing power. Find out if pushers of this type are required on the New York Central Railroad.

Why may a heavy snowstorm in this region inconvenience people living in the cities farther east?

Pennsylvania, Maryland, and West Virginia. The coal is most easily mined in these states.

Coal from this region is easily and cheaply shipped not only to the manufacturing cities but also to the ports of the Middle Atlantic states and New England, all of which depend upon its mines for most of the fuel they need for power and for transportation.

The Plateau is famous for its scenery, especially for that found in the deep river valleys of New York state, and for its mountain resorts. Parts of the Plateau are heavily wooded and furnish some lumber and much wood pulp.

How this region surpasses New England. Thus in the Middle Atlantic states we find the occupations that are most outstanding in New England, and in addition this section is rich in coal and other rock deposits. As we remember how important coal is in manufacturing, it is easy to understand the great development of manufacturing in a region where so many favorable conditions are found.

The Middle Atlantic states are also favored in having a larger lowland area than has New England. Hence there is more room for the development and growth of industries. Moreover, except in the higher portions of New York and Pennsylvania, the climate is more favorable for agriculture than it is in much of New England.

This group of states, as the name suggests, lies along the central part of the Atlantic coast. The lowland sections are therefore not so hot during the summer as are those of the more southern states of the group. Neither are they so cold in winter as is much of New England. The growing season (Fig. 102) is therefore longer than in sections farther north, and on the Coastal Plain spring comes so early that truck crops can be grown for the northern markets.

Although the winters in the Middle Atlantic states are cold, they are not so severe that the harbors are closed by ice, as in Maine and the regions around the St. Lawrence River. The ports are therefore year-round ports into which vessels may enter any day in any month. In some years, however, the port of New York has been closed for a day or two at a time because of dense fogs.

The disadvantages of winter weather. In cold and stormy winter weather railroad transportation over the highlands is somewhat hindered. While the roads are rarely so blocked by snow as to cause any serious delay, it is often difficult when the weather

is very cold to keep up steam enough to haul heavily loaded freight trains. If an engine can haul only a half or two-thirds of the usual number of carloads, then not so much freight can be hauled in a given time and, of course, the cost of getting freight to its destination is increased. So the winter weather in western Pennsylvania may directly interfere with the business man in New York who needs supplies and raw materials, such as food or coal. This is a good illustration of how, in ways that are often overlooked, one section of a country depends upon another.

SOME RELATED PROBLEMS

1. Why was the Erie Canal not built to Lake Ontario instead of Lake Erie?
2. Why were there built at one time many short canals in New York and New Jersey?
3. Into what bodies of water do the rivers of New York flow?
4. Why is a good water supply a necessity for a great city?
5. Read again the story of Rip Van Winkle and see if you can locate the region to which the author refers.
6. How did the Blue Ridge Mountains conceal the movements of the Confederate army just before the battle of Gettysburg?
7. Where does the water that supplies the Erie Barge Canal come from?
8. Why are there no large cities in the eastern shore area of Maryland and in southern Delaware?

58. INDUSTRIES AND CITIES OF THE MIDDLE ATLANTIC STATES

THE LESSON FORECAST

1. Why this group is an iron- and steel-manufacturing region.
2. Why Pittsburgh excels in the manufacture of steel and glassware.
3. Why there are many manufacturing cities along the Erie Barge Canal.
4. Why salt was long an important product of New York.
5. Reasons for the early growth of Troy.
6. The great terminal cities of Buffalo and New York.
7. Why dairying flourishes in New York state.
8. Why the manufacture of clothing is centered in large cities.
9. Why New York City is our leading printing and publishing center.

The interrelation of regions. We have already learned of the importance of manufacturing, business, and trade in the Middle Atlantic states, and some of the reasons why this group leads the country in these occupations. But we must always remember that just as other sections depend upon this great industrial region for many manufactured articles and as a market for their surplus products, so this region itself is dependent upon other parts of the country and of the world for raw materials, food, and other supplies. This interdependence was well shown in the study of New England, which depends in many ways upon the western states, the South, and New York City. We cannot make a complete study of any one section of the country without considering its relation to other sections.

Reasons for the location of the iron, steel, and glass industries. Many different kinds of products are manufactured in this group of states, but some sections are especially notable for the production of certain articles. Pittsburgh, McKeesport, Johnstown, Erie, Bethlehem, and Reading, together with some smaller cities near Buffalo, are famous for steel making. In Pennsylvania alone two sections produce more than half the steel made in the country. One of these sections, in which are located the first three cities just mentioned, lies in western and central Pennsylvania near abundant coal supplies, while the other section borders Lake Erie.

In early days most of the steel was made from Pennsylvania iron ore. Today the greater part of the ore used is brought down

the Great Lakes from the mines of Minnesota, Michigan, and Wisconsin (Fig. 194). For it is cheaper to take the heavy iron ore to the places where coal is to be had for smelting it than to take the coal to the iron-ore regions. Then, again, the largest market for steel is in the most densely populated states which reach from Illinois to New England. Thus we see why steel is made as close as possible to the places where it is to be used.

Steel making is our leading industry because many other industries depend upon it. Factories, warehouses, business buildings, and ships are almost always built with a steel framework; machinery, rails, railroad cars, and automobile bodies more and more are being built of steel. Hence, if there is a demand for steel in a certain place, it means that many other kinds of business are thriving there.

Pittsburgh is the chief steel-making city of the East (Fig. 57). It has splendid rail connections with the East and easy water connections with the many large cities of the Ohio Valley (Fig. 132). It is therefore well situated both for trade and for manufacturing. Pittsburgh also has near at hand supplies of natural gas. This natural gas is buried in the rocks of the Plateau. It is used extensively in glass making, for which the sand is obtained from Pennsylvania and from the easily accessible Coastal Plain of New Jersey.

Coastal Plain and Piedmont Belt cities. Another manufacturing section of especial interest centers about Philadelphia, Pa., and Camden, N. J. These cities are famous for the manufacturing of railroad locomotives (Figs. 130 and 131) and cars and for shipbuilding. As early as 1683 shipbuilding had become well established at Philadelphia. It is also a great woolen and knit-goods manufacturing city and a center for sugar refining.

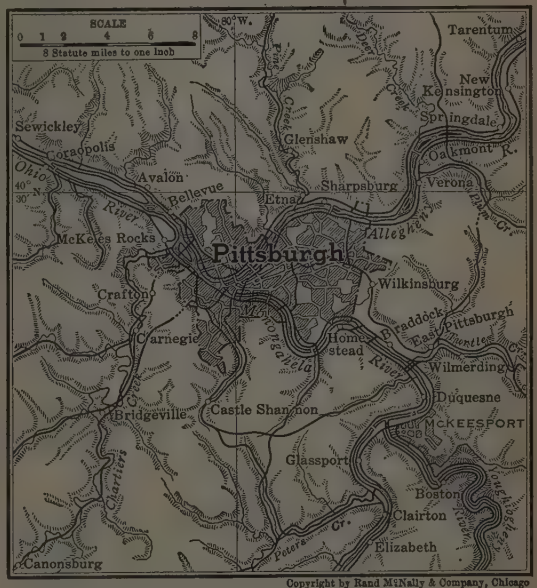


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FIG. 132. **Pittsburgh and the surrounding region.** The advantageous location of Pittsburgh at the junction of the Allegheny and Monongahela rivers is clearly shown in this map. Note the railroads which enter the city from all directions through the river valleys. Can you tell why Pittsburgh has become a great steel-manufacturing center?

Courtesy Baldwin Locomotive Works

FIGS. 130 AND 131. **Two types of locomotives.** At the left is "Old Ironsides," the first Baldwin locomotive built. At the right is a modern Baldwin passenger locomotive built recently at the works in Philadelphia. This powerful locomotive has six pairs of wheels, of which three pairs are driving wheels, and weighs nearly 282,000 pounds. The cost of production is about $25,000. Can you explain why the location of Philadelphia is favorable for producing locomotives and railway equipment?

Courtesy Baldwin Locomotive Works

FIG. 133. **In the assembling shop of a great locomotive works.** This shows the first steps in assembling the parts of a locomotive. The cylinders and driving wheels are in place. The five pairs of driving wheels show that this locomotive is for heavy freight service. A locomotive may have two, four, or possibly eight cylinders. Why?

The location of Philadelphia and Camden close to supplies of coal and iron, and on tidewater, naturally explains why shipbuilding is such a great industry here.

In the early days of railroad building the greatest market by far for railway equipment was found in the East. Hence these two cities have profited from making an early start in which they built up a reputation for the production of a high standard of railway equipment (Fig. 133). There are more miles of railroad in Pennsylvania and New York than in any other eastern state, and more miles of electric roads than in any of the states. There is therefore a large market for railway equipment close at hand.

Cities along the Gateway. In the narrow lowland which extends from Albany to Buffalo are found many manufacturing cities, usually located where the rich river valleys give access to the higher lands of the Plateau. These cities have grown with the development of the Erie Canal and the railroads that follow it. When the great West was first being settled, the Canal was the most convenient route for people to use, and many trading towns grew up along its banks.

Today Syracuse, Rochester, Little Falls, Utica, and other cities are profiting not only from their location on these older lines of travel but also from the fact that they are now connected by excellent roads. Syracuse secures electric power from Niagara Falls and manufactures steel tools, automobiles and automobile parts, farming implements, and other machine-shop products. It was long a center for the salt industry. Rochester, famed for its photographic supplies and optical goods, is situated at the falls of the Genesee where much power is available. The Genesee is the only river that runs north from the Plateau to the lowland bordering Lake Ontario. Its valley has long been a much used trade and travel route, first by canal, then by highway and railroad.

East of these cities, but with the same advantages of location, is Schenectady, a center for the production of electrical equipment and supplies. Still farther east are Albany and Troy, both on the Hudson. Troy lies at the end of the Erie Barge Canal which connects the Hudson with Lake Erie, and also at the end of the canal that connects the Hudson with Lake Champlain and thus with Canada. Famous for its production of collars and cuffs, Troy is another example of a city which has profited from specializing early in a particular product.

Two great terminal cities. The largest and most interesting manufacturing centers are Buffalo and New York City, at opposite ends of the Gateway connecting the Great Lakes with the Atlantic (Fig. 106). Iron, lumber, grain, and other supplies brought down the Great Lakes, in order to reach eastern markets, must be reloaded on canal boats or freight cars at Buffalo (Fig. 135). Around this city, therefore, have grown up many manufactures, all dependent upon

grain or iron ore. Here are great mills which make grain into flour or breakfast foods. That part of the grain which cannot be used in this way is made into cattle feed. At Buffalo, too, are mills where the iron ores (Fig. 134) are brought to be smelted and made into steel which is shipped out, while the waste materials are thrown away.

To have manufacturing done at the place where products coming from a long distance must be changed to a different kind of transportation means a great saving in the cost of delivery. Thus it is not necessary to pay freight to some distant city on waste materials. As freight rates by railway are much higher than the rates by water, the amount saved is large. The mills at Buffalo, for instance, can easily ship the flour to one market and the cattle feed to other markets. As New York is the second dairying state in the country, the market for much of the cattle feed is close at hand, while the flour is quite often sent to foreign countries.

Buffalo and other near-by cities are fortunate in being near Niagara Falls (Fig. 135), which furnish a great amount of electric power for running machinery and electric railways as well as for heating and lighting. So much power is obtained from these falls and from swift streams flowing from the Adirondack Mountains, that New York leads all the other states in the use of water power (Appendix, Fig. 512).

We have already learned that New York City is the largest manufacturing city in

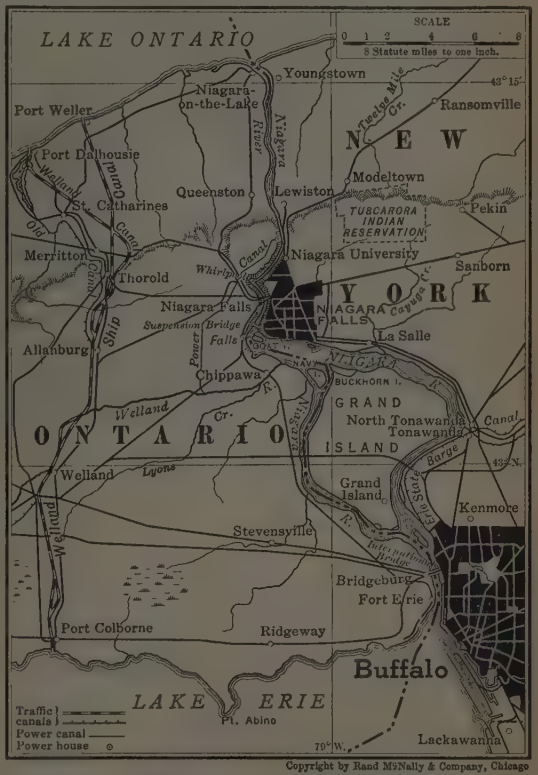

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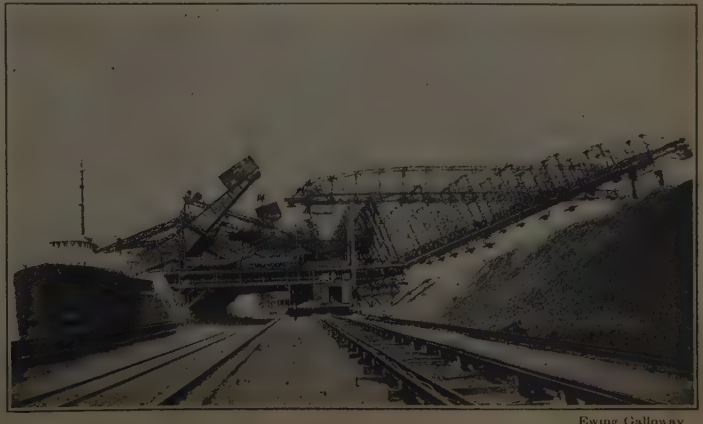
FIG. 135. **Niagara River, Welland Canal, and surrounding region.** How has Niagara Falls helped Buffalo to become a manufacturing center? What canals besides Welland Canal can you find here? How important do you think they are?



Ewing Galloway

FIG. 134. **Unloading iron ore at Buffalo.** The great machines seen in the picture are known as Hulette hoists. These hoists dip into the hold of the ore boat and take out from seven to fifteen tons of ore at one time.

Why is so large a part of the iron ore smelted near the place where it is unloaded? What raw materials besides iron ore are brought down the Great Lakes to Buffalo? Of what other water route is Buffalo the terminal?

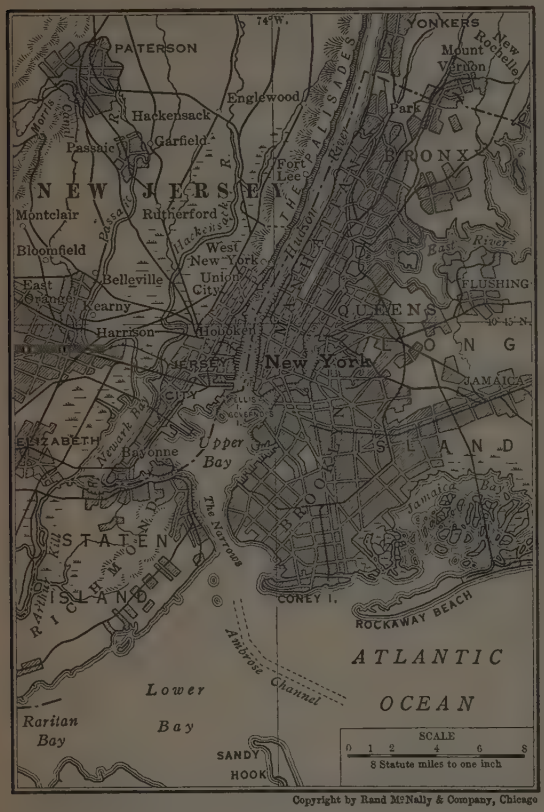


FIG. 136. **Greater New York.** The original New York City stood on Manhattan Island, now the chief business section. Locate the five boroughs into which the city is divided. What island at the southwest is within the city limits? How does the irregular outline of the harbor increase its usefulness?

the country. In New Jersey, across the Hudson west from New York City, are a number of other cities which together with New York City really form one great metropolitan district (Fig. 136).

Many of the railroads spoken of as entering New York really end on the west shore of the Hudson, and here are found many of the wharves at which are docked the vessels that are engaged in foreign commerce (Figs. 50 and 124).

We have seen, however, that New York City is admirably located for carrying on trade in any direction, and for receiving raw materials for its many varied kinds of manufacturing. It leads in the making of clothing and in printing and publishing. Not all the clothing, however, is made in factories. Much of it is made in the homes of the people. In any large city there are many workers who are glad to earn a living by making clothing. In the city of New York there are many people of foreign birth who follow this trade. Great numbers of women do this work at home while the men of the family are busy at other occupations. The near-by market for clothing is very large, because of the dense population in the eastern states. With the great textile mills of New England and the Middle Atlantic states furnishing the cloth, and with the necessary labor right at hand, the continued success of this industry in New York City seems certain

The industry of printing and publishing is the second in importance in New York City. The pulp for paper is produced largely in northern New York and New England at distances not more than two or three hundred miles from the city. The near-by market for books, magazines, and newspapers is large. The morning and evening newspapers read by the people of this great city and its suburbs alone require huge printing establishments. But printing and publishing, unlike the making of textiles, are processes that may not always be carried on with greatest profit in large factories. Printing establishments may be small or large, and usually there are a great number of them in any city. In New York the product of all the numerous printing establishments is so great that the city leads all others in this industry.

Other manufactures of interest are the refineries for sugar and oil centered about New York Bay. Raw sugar is brought in by boat from Cuba and the other islands of the West Indies directly to the mills. Oil is pumped in through great pipes from the oil fields of Texas and Oklahoma. The

Ewing Galloway

FIG. 137. **Fulton Market fish docks, New York City.** The fish are being taken from the boats, weighed, and packed in barrels of ice. They will be distributed to small markets all over the city. Where do you think New York gets its daily supply of fresh fish?

The picture shows only a small section of Fulton Market, where fruit and vegetables are also received. Besides Fulton Market there are a number of other large markets in New York.

The production of vegetables and small fruits is a thriving industry on Long Island. Can you tell why?

Where do markets get fresh fruits and vegetables in winter? How are they brought to the markets throughout the country?

refined oil is shipped to all parts of the world, while the refined sugar finds an extensive market in our own country.

59. THE VARIETY OF AGRICULTURAL ACTIVITIES IN THIS SECTION

THE LESSON FORECAST

1. How manufacturing depends upon agriculture and other industries.
2. Why the number of farmers is decreasing.
3. How refrigeration has helped the growth of cities.
4. How inventions have helped agriculture.
5. Where dairying flourishes best.
6. Influence of glaciation on agriculture in this region.
7. Where market gardening and the growing of small fruits thrive best.
8. Why western New York is a good fruit region.
9. Where wheat and buckwheat are grown extensively.
10. What food materials need to be imported.

Why there are fewer farmers than formerly. We have already learned that the growth of cities is dependent upon an abundant food supply and upon the easy securing of raw materials and fuel. Without agriculture, lumbering, mining, and other important occupations, manufacturing would be almost impossible. Today more than half the population of our country is found in cities. At the same time the proportion of people engaged in producing food and cotton, in mining and lumbering, is small as compared with the proportion who did these things in early days.

But since people have learned better ways of farming, fewer workers are needed on the farms. Today with the use of modern machinery one man can easily do the work that once required a number of men. This leaves more men free for other industries and for business.

How modern inventions have affected the cities' food supply. We have learned (p. 42) that vast quantities of food are needed for a great city like New York (Fig. 137). We have also learned that while many kinds of food can be brought long distances, milk and certain kinds of fruits and vegetables must be produced near where they are to be used. The use of refrigerator cars has made it possible for perishable food supplies and

especially for fresh meat to be carried long distances by boat or train. It is now possible to send fresh meat to foreign countries, for the ocean is no longer a barrier to its transportation. Cattle, sheep, and swine, once shipped by car from the Middle West to the eastern cities, can now be slaughtered near the place where they are raised, and the meat can then be shipped. The space taken by one live animal in shipment will accommodate the well-packed meat from many animals.

Thus inventions have not only helped agriculture but have also helped the cities to get their food supplies. While agriculture is just as necessary as it ever was, not all the products need now be raised near the markets.

Why many sections are devoted to dairying. Agriculture in the Middle Atlantic states is an important occupation, and in many sections a most successful one. Since all of New York and part of New Jersey were once covered by the same great glacier that covered New England, the soils in the higher sections are thin and not good for farming. But the soils upon the slopes that can be cultivated are suitable for raising grass, corn, and other crops upon which dairying depends. This dairying section lies near many cities that need fresh milk daily. In a few farming regions in the foothills of the Adirondacks, butter and cheese are made because it is difficult to ship the fresh milk to market from this section. New York is second only to Wisconsin as a dairying state (Fig. 188).

Where market gardening and fruit growing flourish. Many parts of Long Island and the Coastal Plain are devoted to the raising of vegetables and small fruits, most of the products being shipped to the near-by cities. Here, however, tomatoes are canned in large quantities for winter use. New Jersey is one of the leading states in the production of sweet potatoes.

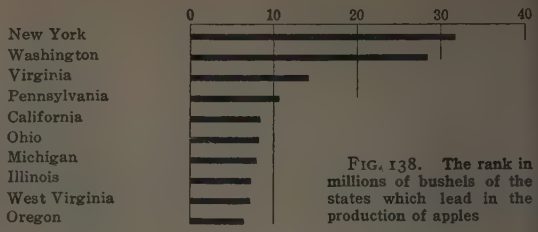


FIG. 138. **The rank in millions of bushels of the states which lead in the production of apples**

In western New York and bordering the Great Lakes is a fruit region well known for certain kinds of grapes and for fine apples (Fig. 138). In the production of grapes New York ranks second in the country and in apples first. Fruit growing is especially successful in this region because it lies near great bodies of water which do not warm up in spring and do not cool off in autumn so rapidly as land does. The trees and vines of this area, therefore, do not bud so early in the spring and thus escape injuries from late frosts. Warm, sunny weather in autumn ripens the grapes and helps the apples to grow large and bright in color.

Other notable crops. On the colder and thinner soils of the Plateau and in some other regions buckwheat is grown extensively. In western New York, where the farming land has gentle slopes, wheat is grown in large quantities.

Lancaster County, Pennsylvania, is one of the principal centers of tobacco production in the country. Here, since the soils are especially adapted to diversified farming, tobacco is usually grown in rotation with corn, wheat, and clover. The large tobacco plantations are found in the states farther to the south. The tobacco that is grown in Pennsylvania is known as cigar-leaf and cigar-filler (Fig. 139).

Food that must be imported. Although throughout this group of states farming is a most successful occupation, yet because of the many large cities not enough food can be raised to supply the needs of the people. So this region, like many industrial centers

Ewing Galloway

FIG. 139. **Curing or drying a tobacco crop.** When the tobacco is ready for curing, the plants are cut and hung loosely in an open shed or barn. The curing process takes a number of weeks but may be shortened by the use of artificial heat. After the tobacco is cured, the leaves are stripped from the stalks and made into large bunches. These bunches are then packed into bundles of about a hundred pounds each.

The tobacco seen in the picture was grown in Lancaster County, Pennsylvania, near the city of Lancaster. Find this city (Fig. 106). In what part of the Appalachian Highland is Lancaster County? Do you think tobacco thrives in this region? Why?

here and in Europe, has to bring much of its food from distant regions. This is especially true of meat, flour, and vegetables and fruit for winter use.

60. OTHER IMPORTANT OCCUPATIONS

THE LESSON FORECAST

1. The rock and forest products of this region.
2. Why New York City is our leading commercial city.

Other valuable mineral products. We have learned how coal mining in Pennsylvania is the occupation upon which most of the industries of the East depend. But the other rock products of this region also furnish valuable raw material, and Pennsylvania ranks first in the quarrying of slate and stone and in the production of cement. New York and New Jersey also produce large quantities of cement. Because of the growing demand for concrete in the erection of buildings everywhere, and in road making, the manufacture of cement is increasing.

Concrete can be poured into molds of any form, and is therefore a most convenient building material. When made of cement properly mixed with sand and gravel, and carefully dried, concrete is as solid as rock and will last a long time.

In the Coastal Plain of New Jersey and in the lower Hudson Valley the clays are used for making brick and pottery. New Jersey clays are also used for the manufacture of tile employed so much in draining land and in the making of concrete and steel buildings. Thus we find that these states have many rock products much needed in the numerous cities and towns of the East.

Where forest products are obtained. In these states, except in a few sections, lumbering is not an important industry. Hardwoods from the Plateau and the higher regions of New Jersey and Pennsylvania furnish some lumber for local use. The forests of northern New York produce enormous quantities of wood pulp, which is required in paper making. In fact, New York ranks second to Maine in the wood-pulp industry (Fig. 109).

Commerce and trade of this region. We have already learned (p. 41) that many different kinds of business must be carried on

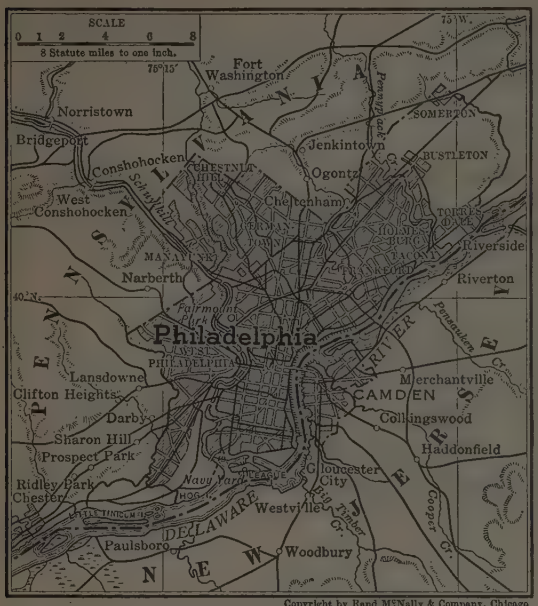


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FIG. 140. **Philadelphia and the surrounding region.** This map shows clearly that the city has spread far out in three directions. Why has it not been built eastward? Which city has the advantage of plenty of building room, Philadelphia or New York? Give the reasons for your answer.

in any great city that is a commercial center. New York and Philadelphia are both great cities in which many thousands of people are engaged in commerce, banking, and other lines of business. Because New York is the nation's leading business center, it also is the largest banking center. Its banks do business with other banks in all parts of this country and also with those of foreign countries.

It is not easy to find out just how much business is carried on in a great city. The exact amount of the foreign commerce, however, can be learned from the customs office where record is kept of all articles brought in and sent out of the country. Since commerce is carried on by individuals under the protection of the government, it is usually possible to get the figures for the business done in all the various branches of trade. From these figures we can judge fairly well which cities are our largest trade centers. In foreign trade the port of New York exceeds all other ports in the country, largely, as we have already seen, because of its fine harbor, its location, and its rail connections.

61. PLACES OF INTEREST IN THIS GROUP OF STATES

THE LESSON FORECAST

1. How cities expand to meet new business needs.
2. Why land is not equally valuable in different parts of a city.
3. Why the highest buildings are not always in the center of a large city.
4. Why our national capital is a large and attractive city.
5. Why we find many popular vacation and playground centers in this group of states.
6. Some places of historic interest.

Why there are high buildings in large cities. We have seen how Philadelphia (Fig. 140), New York, Baltimore, Pittsburgh, Buffalo, and a number of other cities of this group of states have grown because of a favorable location. As they grew and their trade increased, their needs grew, and more and larger buildings became necessary. In all large cities there is always one center, and sometimes a number of other centers, where most of the business is carried on. As business increases, the land used for business buildings grows in value because more people want to use it. In order, therefore, to accommodate as much business as possible in a small area, high buildings are put up. Some skyscrapers, as tall buildings are called, are more than fifty-five stories high and house thousands of people during the busy time of the day.

A photograph of almost any city taken from the air would show that the high buildings are usually grouped together. In New York City, because land is most valuable at the south end of Manhattan Island, most of the high buildings are crowded into that section (Fig. 141). In Philadelphia, a city

Brown Brothers

FIG. 141. **The sky line of lower New York City.** This view, taken from the tower of Brooklyn Bridge, shows the water front and the southern end of Manhattan Island. What can you find in the picture which tells you that the land shown is of great value? Why do you think Manhattan has become a business rather than a residence district? Locate on the New York City map (Fig. 136) the area shown here. What other island is connected with Manhattan by Brooklyn Bridge?

built on flat ground with room for growth in almost every direction, the tall buildings are centered about the junction of the main business streets. From this center the city has spread out in every direction (Fig. 140), while in New York, because of the shape and size of Manhattan Island, much of the city lies north of the business district. In Buffalo the higher buildings are found near the wharves on the lake front, because there is the chief business center.

The site of our national capital. In the southern part of this group of states, and lying between Maryland and Virginia, is the District of Columbia, in which is Washington, our national capital (Fig. 242). It is the seat of our government and the home of the president of the United States. Because of its broad streets, many small parks, and stately government buildings, Washington is one of the most beautiful cities in the world. Surrounding it in Maryland and Virginia are a number of delightful residential towns that are really a part of Washington. Moreover, its location is an unusually attractive one, for it lies on the Potomac at the head of navigation in a region of great scenic beauty. Of special interest among the many notable places to visit in the city are the beautiful and imposing Memorial to President Lincoln, the lofty Washington Monument, the White House, and the Capitol. Near by, on the banks of the Potomac, lies Mount Vernon, the fine old home of President Washington (Fig. 142).

Vacation and recreation centers. Every year all large cities have thousands of visitors, some of whom come on business, some for recreation and sight-seeing. Nearly every city has large art galleries and museums. All of them have theaters and amusement places which furnish entertainment. All these things attract many visitors who want a short vacation and change of scene.

People usually think places famed for their scenery, climate, or historic interest are the only places to be visited. But during the summer months the shores of New York and New Jersey afford opportunity for millions of people to play or rest on the beach or to swim in the salt water of the ocean. Among the many shore resorts of New Jersey, Atlantic City is the largest. All these resorts are cool in summer because the beaches upon which they are built are separated from the mainland by a broad bay. So, whichever way the wind blows, it crosses water and is therefore cooled before reaching the resorts.

The Adirondacks and the Catskills are both popular summer-vacation playgrounds

Leet Bros., Inc.

FIG. 142. **Mount Vernon, the home of George Washington.** This is a view of the north end of the mansion instead of the front and south ends usually shown in pictures.

Mount Vernon lies fifteen miles down from the city of Washington on the Potomac. From the front of the mansion there is a fine view of this beautiful river. As nearly as is possible, the furnishings of the house today are the same as they were in the long ago days when George and Martha Washington lived there.

See if you can find out how large the Mount Vernon estate was. Why do you think it was desirable in the early days of our country for a plantation to be located upon a navigable river?

Ewing Galloway

FIG. 143. **An automobile tourist camp in New York.** The camp shown in this picture lies near Watkins Glen, one of the scenic gorges in the Finger Lake region. Ithaca (Fig. 106), where Cornell University is located, lies at the end of one of these Finger Lakes. See if you can learn the names of the two largest of this group of lakes. Thousands of tourists visit this beautiful region each year.

What conditions do you think help make an ideal spot for a tourist camp? Which of those conditions can you see here?

because of their cool climate and the beauty of their wooded mountains. Because the streams and small lakes furnish excellent routes for canoeing, they are popular with hunters and campers. The mountains of Pennsylvania, Maryland, and New Jersey are also much visited in summer. The Adirondacks are a center of winter sports.

In west-central New York there is a group of large lakes, known as the Finger Lakes, which are most popular summer playgrounds (Fig. 143), as are the shores of Lake Erie and Lake Ontario and of the St. Lawrence River.

But the place visited more than any other in these regions for its beauty is Niagara Falls where Niagara River (Fig. 134), rushing on its way from Lake Erie to Lake Ontario, leaps over a great cliff more than 150 feet high. The water here is very clear, because all the sediment brought down to the lakes by the many small streams has long since settled. When the sun shines upon the great

wall of water pouring over the cliff, the beauty of the rainbow coloring is beyond description. With the exception of Victoria Falls (Fig. 397) in southeastern Africa, the volume of water pouring over these falls is greater than that of any other falls known.

Because of its location, easily accessible by railway, boat, and automobile, many thousands of tourists each year visit Niagara Falls and the deep gorge.

There are many other places of historic interest in these states. In Philadelphia, for instance, is Independence Hall in which was signed in 1776 the Declaration of Independence. Here is housed the famous Liberty Bell. In the region from Lake Champlain to Baltimore are many places made memorable because of their connection with important events in the American Revolution.

62. LOOKING AHEAD

THE LESSON FORECAST

1. The industrial problems of this region.
2. How a Great Lakes–to–ocean water route would affect this region.

Problems to be solved. We found in our study of New England that each region devoted to industry has many problems to be solved in order to maintain its place in competition with other manufacturing sections of the country. How to secure plenty of raw material and ample power to run his mills and how to provide healthful working conditions for his laborers are problems that every manufacturer must face. Another problem facing the manufacturer is that of finding a market for his goods when other factories are turning out equally good products which because of certain advantages in production or marketing can be sold cheaper.

The people of the Middle Atlantic states face still other problems. Will the remarkable growth of cities and increase of manufacturing in the North Central states to the west give this section the leadership in industry? Will the greatest market for steel shift west and much of the steel therefore be made nearer Lake Michigan? Will the farms of the West continue to furnish food to the East cheaper than it can be raised there, and hence make eastern farming less and less profitable? Will it then be possible to ship fresh milk long distances without danger of spoiling? If this happens, how will it affect dairying in the eastern states?

What would be the effect on New York City and other cities of the state if the Erie Barge Canal were so enlarged and deepened that ocean-going vessels could sail direct from New York City to the Great Lakes? If a channel for ocean-going vessels were built between the Great Lakes and the St. Lawrence River, what effect would it have on the cities of New York and Pennsylvania?

These are a few of the problems confronting the people in this group of states.

SOME RELATED PROBLEMS

1. How has the use of concrete helped in the growth of cities?
2. Why are there railroad tunnels under the Hudson River at New York City?
3. How does the weather influence shipping?
4. Why are New Jersey shores used as winter resorts while Long Island shore is not?
5. Why is northern New Jersey engaged largely in the making of brick and tile?
6. Why has New York City such a great supply of cheap labor?
7. Why are there so many large cities near New York City?
8. Why is the southern end of Manhattan Island the most crowded business district in the world?
9. Why is West Point a suitable location for a military school, while Annapolis is a favorable one for a naval school?
10. How far is it in a straight line from New York City to Cleveland? (Use scale of miles, Fig. 89.) Compare this distance with that by way of the New York Central Railroad. (Consult a railroad time-table.)

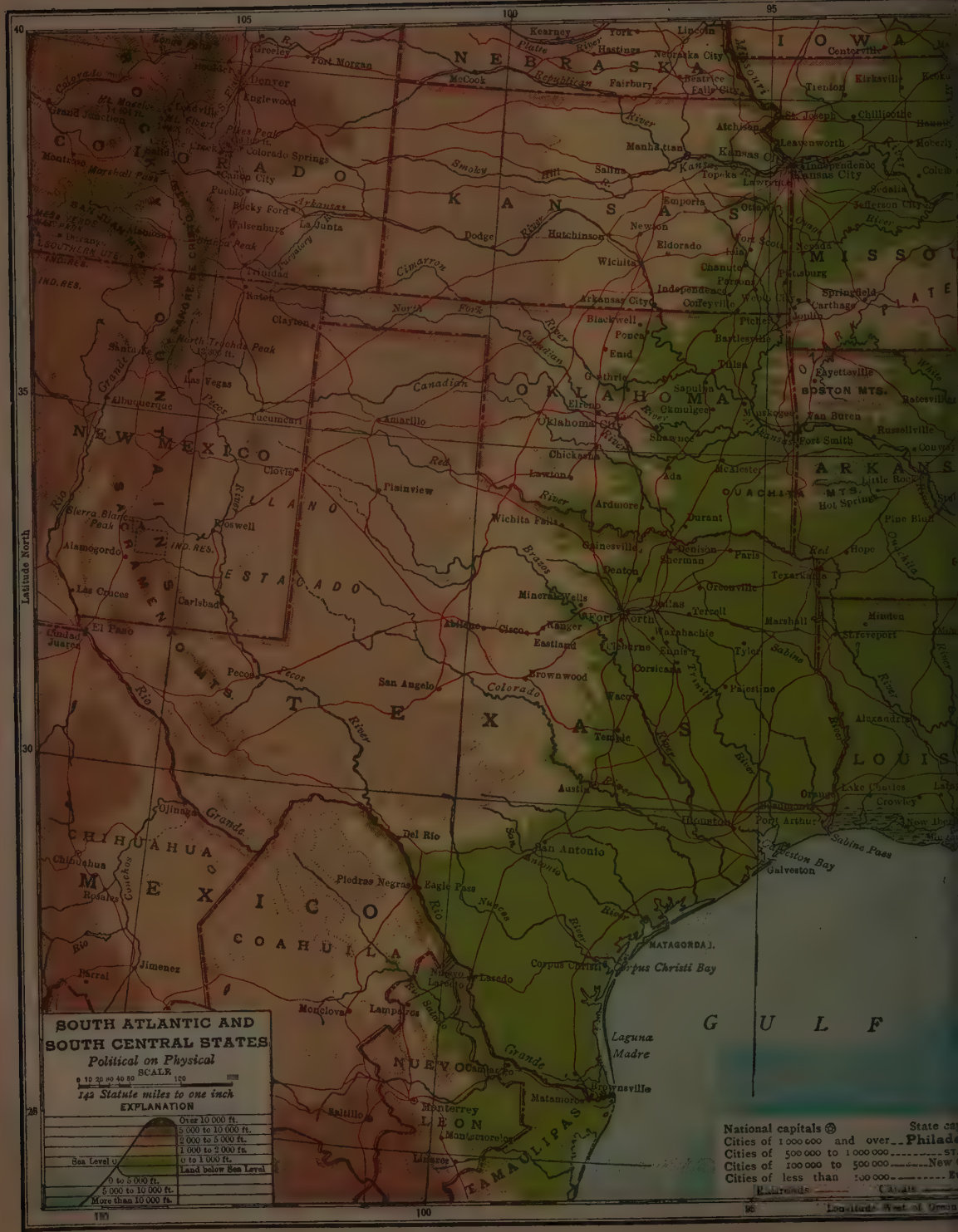


FIG. 144. A Map of the So

lantic and South Central States

THE SOUTH ATLANTIC AND SOUTH CENTRAL STATES

63. WHAT THE MAPS, TABLES, AND GRAPHS SHOW

Problems:

1. Why is agriculture the most important occupation in all the southern states? (*a*) What are the leading crops grown in these states? (*b*) Which of these crops are not grown in the North? (*c*) Where is cotton grown? Where are oranges grown? (*d*) Which of these two crops requires the longer growing season and the warmer climate? (*e*) Where do the states in this group market their surplus crops? (*f*) Why is the production of cotton of increasing importance to the entire country? (*g*) Why is the South a great cotton-growing region? (*h*) In which states are highlands to be found? (*i*) Which states lie wholly in the lowlands? (*j*) Why are these lowlands favorable for agriculture? (*k*) What reasons can you give for thinking agriculture an important industry in the South?
2. What reasons can you give for the location and growth of the larger cities of this region? (*a*) How are the sites of the larger cities indicated on the map? Which are ports? Where are they located? (*b*) Why is it easier for large vessels to reach Norfolk than to reach New Orleans? (*c*) What product is raised in large quantities near New Orleans? (*d*) Why is it cheaper to ship this product by water than by rail? (*e*) Why is Galveston a great cotton port? (*f*) What large cities are on the Ohio and Mississippi rivers? (*g*) Why are these locations a great advantage? (*h*) What cities are located on the Fall Line? (*i*) Which large cities in these states are not ports, river towns, or Fall Line cities?
3. Why are the southern states not so densely populated as the northern states just studied? (*a*) What is the leading occupation in the South? How do the maps show this? (*b*) Why is the population more widely distributed in an agricultural region than in an industrial one? (*c*) Which of these states has the greatest area? the least population per square mile? (Appendix, p. 434.) (*d*) In which state in this group are found the largest number of cities with a population of more than 100,000? (*e*) How does this number compare with the number found in New Jersey? (*f*) Why are there so few large cities in western Texas and Oklahoma? Why is this section less densely populated than Mississippi or Alabama? (*g*) Summarize your answers to the problem.
4. In what ways do the southern and northern states depend on each other? (*a*) What two crops of the South are especially

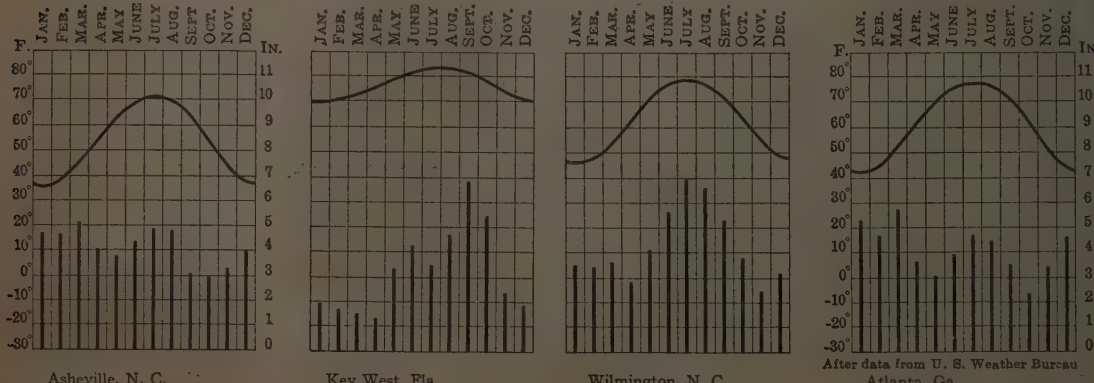

JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT. OCT. NOV. DEC.
F.
IN.
80° 70° 60° 50° 40° 30° 20° 10° 0° -10° -20° -30°
11 10 9 8 7 6 5 4 3 2 1 0
Asheville, N. C.
Alt. 2,250 ft. Temp. 54.1°
Rainfall 49.56 in.
Key West, Fla.
Alt. 22 ft. Temp. 76.8°
Rainfall 38.66 in.
Wilmington, N. C.
Alt. 79 ft. Temp. 63.1°
Rainfall 51.05 in.
Atlanta, Ga.
Alt. 1,174 ft. Temp. 61.2°
Rainfall 49.36 in.
After data from U. S. Weather Bureau

FIG. 145. **Average annual temperature and rainfall for four cities of the South Atlantic states**

needed by the mills and factories of the North? (*b*) What goods made in the North are needed in the South? (*c*) For which of the following products manufactured in the North would there be a large market in the South: woolen goods, cotton goods, shoes, electrical supplies, canned corn, canned tomatoes, automobile tires, plows, tractors? Give reasons. (*d*) What food products of the South are sent in large quantities to the North? During what seasons are they in special demand? (*e*) Why do more people visit Florida in winter than in summer? (*f*) Where do the winter visitors come from? (*g*) Why do not the southern states buy a great deal of food from the northern states? (*h*) What product of southern farms can be bought at almost every grocery store and fruit stand in the North? (*i*) Summarize your answer to the problem.

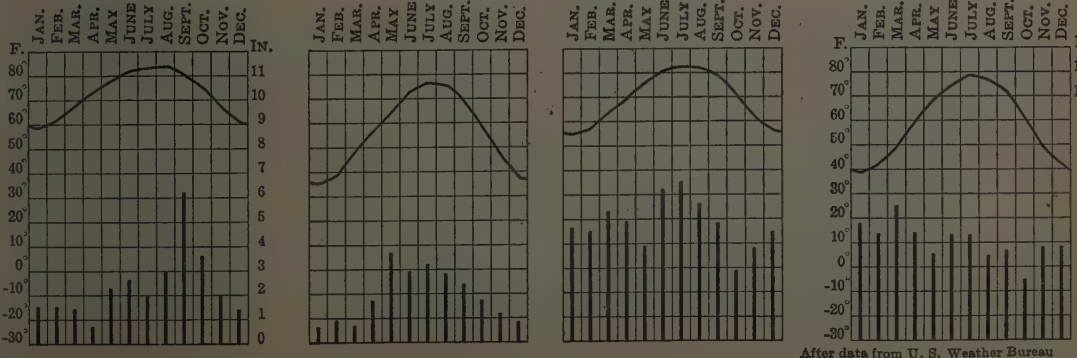
5. How do the climatic maps and graphs help us to understand the distribution of crops in the South? (Figs. 98, 102, 145, and 146.) (*a*) What place in this group has the highest summer temperature? (*b*) In what place is the January temperature higher than the July temperature in Canton, N. Y.? Explain the reasons why. (*c*) What places have the smallest annual rainfall? (*d*) In what four places is the rainfall most evenly distributed throughout the year? (*e*) Where is the rainfall heaviest in early summer? in midsummer? in autumn? in winter? (*f*) What crops grow best under these conditions of rainfall and temperature?

Questions:

1. What region in this group of states has the highest altitude?
2. Which state has the most lowland? the largest number of lakes?
3. What country lies south of the Rio Grande? Why is the Rio Grande an important stream?
4. How long would it take a train running thirty miles an hour to go from El Paso to New Orleans?
5. What cities are situated directly north of Palm Beach? north of New Orleans?
6. If traveling by railway from Cincinnati to Atlanta, where would you expect to find the most interesting scenery?
7. Why is Atlanta a great railway center?

Minimum essentials in location:

Be able to locate and name on an outline map each state and its chief city, six rivers, three bays, two capes, the Blue Ridge, Cumberland Plateau, Great Plains, and the following cities: Washington, Norfolk, Charlotte, Savannah, Columbia, Asheville, Miami, Chattanooga, Fort Smith, Jackson, Key West, Mobile, Nashville, Fort Worth, San Antonio, El Paso, Knoxville, Galveston, Dallas, Tulsa, Shreveport.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F.
IN.
80° 70° 60° 50° 40° 30° 20° 10° 0° -10° -20° -30°
11 10 9 8 7 6 5 4 3 2 1 0
Brownsville, Tex.
Alt. 57 ft. Temp. 73.1°
Rainfall 28.2 in.
Amarillo, Tex.
Alt. 3,676 ft. Temp. 56.3°
Rainfall 22.55 in.
New Orleans, La.
Alt. 51 ft. Temp. 69.3°
Rainfall 57.42 in.
Nashville, Tenn.
Alt. 546 ft. Temp. 59.3°
Rainfall 48.49 in.
After data from U. S. Weather Bureau

FIG. 146. Average annual temperature and rainfall for four cities of the South Central states

64. HOW THE SOUTH HAS DEVELOPED

THE LESSON FORECAST

1. Why agriculture is the leading occupation in the South.
2. The chief surplus crops of the South.
3. The advantages of the South for manufacturing.
4. The distribution of rainfall and the range of temperatures.
5. Location and importance of the Coastal Plain.
6. The nature of the Piedmont and how man uses it.
7. The Appalachian Mountain barrier and the Great Valley.
8. Conditions on the Appalachian Plateau.
9. The Great Plains and the Ozarks.

The South as an agricultural region. The South, as the great region extending from Virginia southward to the Gulf and westward to Texas is called, is the one section of the country in which agriculture exceeds every other occupation in importance. The South is for many reasons mainly an agricultural region (Figs. 94 and 159). In early days the settlers grew almost nothing but tobacco for export to Europe, although later cotton became the surplus crop for European trade. Tobacco was not known in Europe until after the discovery of America. In Virginia and other colonies of the South the tobacco was raised on large plantations, and most of the product was shipped to Europe in vessels that docked at the plantation wharves. Negroes were brought in to do the work on the plantations, because they were used to living and working in a hot, moist climate. Today they are found in large numbers in both the tobacco and the cotton regions.

When cotton was first grown in the South, the seeds had to be separated from the fiber by hand. Then the cotton gin, which could do this work in much less time, was invented. After hand labor had given place to machine labor, more cotton could be raised than was needed at home. Soon cotton became "King" of the South, being raised in great quantities for export to the North and to Europe. Cotton still leads in importance in the South, although other crops, such as sugar and rice, are raised especially for use in our own country. These three crops, which require a long growing season and thrive only in warm, moist regions, have become the chief surplus crops of the South. The region also favors the growing of many other kinds of products the North needs.

The increase of manufacturing. Agriculture is not, however, the only occupation in the South, for in many of the cities manufacturing is steadily increasing. The southern states are rich in resources of petroleum (Fig. 235), phosphate, iron, and other rock products that are being developed (Fig. 95). In addition these states have great wealth of forests and abundant water power (Figs. 91, 148, 228, and 512).

The rapid development of the many valuable resources of the South has resulted in a steady growth of manufacturing and in an annual increase of the foreign commerce carried on through its various ports (Fig. 149). The outlook for the expansion of the South into an industrial as well as an agricultural center is a promising one.

The climate of the South. Because of the varied climate and the favorable conditions throughout the South, we find within this wide region many kinds of trees and crops. The low-lying Coastal Plain and Piedmont areas have a warm, moist climate with plentiful rainfall in summer. Near the Gulf, in Mississippi, Louisiana, and Texas, the rainfall in midsummer is abundant, showers succeeded by sunshine occurring almost daily. Farther to the west, in western Oklahoma and Texas, the rainfall is so slight in the Great Plain area that vegetation is scanty. This region is therefore devoted to grazing and to such agriculture as depends upon irrigation.

Courtesy U. S. Department of Agriculture

FIG. 147. **A public cotton gin in Texas.** Each wagon in this picture holds enough seed cotton to make a bale of lint or cotton fiber weighing about five hundred pounds.

In early days almost every plantation had its own cotton gin. Today public gins are found in all parts of the Cotton Belt, the plantation gins having almost disappeared. With the increase in the number of small farms and the increase in cotton production has come an increase in the number of public gins. Can you explain why?

Southern Air Service

FIG. 148. **Power plant on Yadkin River, in North Carolina.** In its upper course the Yadkin, known in South Carolina as the Peedee, falls from 3,000 feet to 1,000 feet, thus furnishing a great amount of power. From what highland does the stream flow?

The plant seen here is located about twenty-two miles above the Fall Line. Its generating capacity is 35,000 horse power. Some of this power is transmitted to Raleigh a hundred miles away. For what purposes do you think this power is used? Find out what a spillway is. Why is one necessary with this dam?

Courtesy U. S. Shipping Board

FIG. 149. **The harbor, Mobile, Ala.** The two ships in the foreground of the picture are steel cargo steamers of the "Mobile Oceanic Line." They are being loaded with lumber and logs directly from the water.

The boats of this line ply between east Gulf and European ports. The outgoing cargoes include lumber, naval stores, cotton and cottonseed products, grain, and phosphate rock. On return trips the cargoes are largely steel, fertilizer, and cement. Why should the South import steel and cement from Europe? Find out which European countries send fertilizers and cement.

The higher regions of the Appalachians and the Cumberland Plateau, although moist, have a growing season (Fig. 102) shorter than that of the lowlands. Hence agriculture is not important in these regions except in the lowlands of certain valleys. These higher regions are heavily forested (Fig. 82). Here are a number of large wooded areas set apart by the government as national forests, or else privately owned.

Although the climate during summer is always warm, the South does not usually have as intensely hot days as are often experienced in the North during a hot spell. The summer nights everywhere, except in the highlands or near the ocean, are but little cooler than the days. Hence, one accustomed to cool nights would naturally think of this as a very warm region. Another reason why people think the South uncomfortably hot in summer, when it is really just uniformly warm, is because the sun is higher in the sky than it is farther to the north, and consequently its rays are more direct and intense.

The physical features of the Southland. We have already seen that the lowland of the Coastal Plain borders the Atlantic Ocean from New Jersey to Mexico, and that a lowland extends northward from the Gulf of Mexico to the mouth of the Ohio (Fig. 86). This lowland, known as the alluvial plain of the Mississippi, is a broad, level area, much of which lies below the level of the river at time of flood. To protect the plain, high banks, or levees, have been built. Sometimes, during the spring floods caused by rain and melting snow, the force of the water breaks the levees, and great damage is done to life and property. Wherever the land in this alluvial plain is used, varied and abundant crops are raised, for the soil is extremely rich. In many places throughout the plain are found extensive forests which furnish much valuable lumber.

In the Coastal Plain are many large areas which are fairly flat and hence easily cultivated. In Florida, where much land lies so nearly at sea level that it is not well drained, there are many lakes and swamps. In some sections of the Coastal Plain the soils are extremely rich and large areas are under cultivation, cotton and sugar cane being the special crops raised. Wherever the rock layers beneath the surface are sandstone, the soil is poorer and agriculture is not so successful. These sandy areas are, however, covered with forests which often yield valuable lumber.

The Piedmont Belt (Fig. 86) is a rolling and picturesque region with much good farming land, especially in the larger valleys. In the northern section tobacco and fruit are raised, and dairying is carried on. In the southern section cotton is the leading crop (Fig. 94).

The Appalachians rise so abruptly to the west of the Piedmont that south of the James River they form a wall difficult for railroads to cross. Hence the routes between the North and the South follow the eastern lowland or the Great Valley, which lies west of the mountains. This Great Valley is a continuous lowland broken by many nearly parallel short ridges and small valleys (Fig. 150). In these small valleys the soil is rich, the broader valley of the Tennessee River with its tributaries being famed for its agriculture and industry. Here have grown up several large and thriving cities.

The edge of the Cumberland Plateau faces the Great Valley in an almost vertical cliff which is several hundred feet high. It is often called the Allegheny Front because its wall is so continuous. The Plateau is therefore not easily reached by rail, and only two railroads cross it. Good roads are few. Villages and towns are far apart, and very often their locations were determined by the presence of water near at hand. The

Official photograph, U. S. Department of Agriculture

FIG. 150. **Corn in the shock in western Virginia.** This scene in the Shenandoah Valley shows clearly the rolling surface of the land in that region. In what direction and into what other river does the Shenandoah flow? (Fig. 144.) Name the mountains just east of this valley. What plateau lies west of the valley?

FIG. 151. **A scene in the Ozarks.** This is a view in the Ozark Plateau of southern Missouri. To avoid building a number of bridges across Spring River, a stream with many windings, it was necessary in constructing the railroad to cut a passage through a ledge of rock.

This mountainous and wooded region is each year becoming more and more popular as a pleasure and health resort area, just as are the mountains of Virginia and North Carolina. What other mountain-resort areas can you name? Do you think this region will ever be as much visited as the Adirondacks? Give the reasons for your answer.

Courtesy Frisco Lines

principal resource of the Cumberland Plateau lies in its extensive forests of hardwoods, although some coal is mined where the deposits lie near the surface.

West of the Mississippi lowland the land gradually rises, and the climate is drier. One finds, therefore, a constant change in the kinds of crops and in occupations as one nears the Great Plains region in which lie western Texas and Oklahoma. The only highland in this western section, the Ozark Plateau, is found in Arkansas and Missouri (Fig. 151). Here the surface is rough and hilly, much like the mountainous areas of Tennessee and North Carolina, although not so high. In these highland areas the industries and occupations are the same as those in the eastern Appalachians. Some of the mineral and rock resources here, such as limestone and sandstone, are being worked.

Courtesy U. S. Department of Agriculture

FIG. 152. **Cultivating cotton.** Notice the two-mule cultivator which is commonly used in Texas and Oklahoma. In what part of the Cotton Belt do you think this picture was taken?

The cultivator shown here stirs up the ground on both sides of the cotton rows. In western Texas especially cotton planters are beginning to use tractors with two-row cultivators, and some planters are now experimenting with four-row cultivators. Do you know what part of cotton raising is still done largely by hand?

What enemy of the cotton plant often makes it difficult for the cotton planter to raise a successful crop? How may poor weather conditions damage the crop?

65. AGRICULTURE THE LEADING INDUSTRY OF THE SOUTH

THE LESSON FORECAST

1. The maintenance crops of the South.
2. Why cotton is especially adapted for growth in the southern states.
3. What is meant by the Cotton Belt.
4. How the boll weevil has caused changes in agriculture in the South.
5. The difficulties of producing sugar on the Mississippi delta.
6. Why rice can be grown cheaply in the South.
7. Why the production of vegetables and small fruits is a flourishing industry.
8. The conditions favorable for raising citrus fruits and peaches.
9. Why the outlook for agriculture is promising.
10. Advantages of the South for cattle raising.

The maintenance crops. In the South, as elsewhere, growing surplus crops is only one part of the agriculture carried on. Crops for food and especially for the horses, mules, and cattle needed on the farms and plantations are necessarily important. The South, with its long, warm summers and frequent rains, is well suited for growing corn. This crop, however, is grown only for local use and is not considered of great importance, although Georgia grows nearly as much corn as Kansas, a Corn Belt state. Oats and wheat are other grains grown for stock feed.

Why cotton growing is important. In the states lying east of the Mississippi River cotton was long considered the only profitable crop, and people did not grow enough food either for themselves or for their animals. Finally so many farmers were growing cotton that the market was oversupplied and the prices dropped so low that it did not pay to raise only cotton. As a result the farmers of the South are now raising a greater variety of crops and producing dairy supplies for the rapidly growing cities near by. Today, even in the Cotton Belt, agriculture does not consist of cotton alone, although cotton is still, and probably will long continue to be, the most important crop.

The South is especially adapted to cotton growing (Fig. 152) because the summer climate in every way favors it. Cotton, in order to grow and mature, requires a growing season of at least two hundred days.

The spring must not be so wet that the ground cannot be tilled, yet there must be sufficient rain during the summer months when the crop is growing most rapidly. The autumn must be dry so that the bursting cotton bolls which contain the cotton fiber may not be too wet for picking.

While all these conditions are found in almost all parts of the South, cotton grows best in the rich soils of the Coastal Plain of Texas, Alabama, and Georgia, in the Piedmont Belt south of Virginia, and in parts of the rich alluvial plain of the Mississippi (Figs. 153 and 154). This is the so-called Cotton Belt, from which comes most of the cotton grown in the country. Texas leads all the states in production (Fig. 155).

In recent years, however, the production of cotton has suffered a handicap because of the damage done to the growing crop by the boll weevil. This small insect, which first appeared in Texas, is now found throughout the Cotton Belt. The weevil lays its eggs in the young cotton bolls. Upon hatching, the larvae, as the young are called, feed upon the cotton fibers growing within the boll. Because of the destructive work of the boll weevil many farmers have been forced to turn from cotton growing to other crops which can be cultivated more successfully. Thus what first seemed a calamity has really in some ways proved an advantage. With a

FIG. 154. **A cotton gin in Leland, Miss.** This cotton gin is only part of a large plant which also includes a cotton-oil mill. What advantages can you see in combining the gin and the mill? Notice the intake pipes which carry the seed cotton from the wagons to the gins.

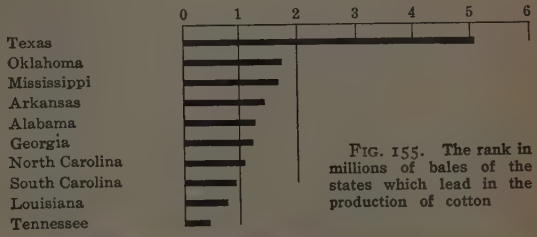

FIG. 155. **The rank in millions of bales of the states which lead in the production of cotton**

FIG. 153. **Sampling cotton at Shreveport, La.** The cotton seen in the picture, is ready to be sold. To fix the price each bale of cotton is being inspected to determine both the length and the quality of the fiber.

The two kinds of cotton most in demand in the markets are upland long-staple and upland short-staple. In the first kind the length of fiber varies from 1⅛ inches to 1¾ inches; in the second kind it varies from ⅝ inch to 1 inch, sometimes exceeding an inch. Fray samples of cotton cloth and measure the length of the fiber.

Courtesy Bureau of Agricultural Economics, U. S. Department of Agriculture

Courtesy U. S. Department of Agriculture

FIG. 156. **Cutting sugar cane on a plantation.** The cane is cut with a large knife known as a machete. After the cane has been stripped of its leaves and topped, it is hauled to the mill either in wagons or in small cars on the plantation railway.

Sugar plantations are usually large. Often they include thousands of acres, and operate their own mills. Hundreds of workers are needed in cultivating and harvesting the crop. What advantage can you see in having the mill and the plantation under the same management? Do you know which state leads in the production of sugar?

variety of crops it is not likely that a farmer will lose the profit on a season's work, as may happen when he grows only one crop.

How sugar is produced from cane. In Louisiana, Alabama, and eastern Texas are raised large quantities of sugar cane, the second great crop of the South. Sugar cane requires a rich soil, a growing season even longer than that necessary for cotton, and a heavy summer rainfall. All these conditions are found in the alluvial plain of the lower Mississippi, which leads the country in the raising of sugar cane (Fig. 156).

Sugar cane really thrives best in such tropical regions as the island of Cuba because there cane grows up year after year from the same plant. In this country, however, where freezing occurs in the sugar-growing section, the crop must be planted each year. Deep furrows are plowed in the field, and pieces of cane stalk are placed in them and covered with earth by machine.

When the crop is ready, it is cut and at once hauled to the sugar mill. On the larger plantations the cane is hauled in small, open cars over railroads built from the fields to the mills. At the mills the cane is crushed, and the juice is boiled down until the sugar crystallizes. Much of this product, known as raw sugar, is shipped, usually in ocean-going vessels, to sugar refineries in the North. There it is made into the granulated and loaf sugar used in our homes and in the manufacture of candy and soft drinks. Other products of the sugar mills are molasses and cane syrup, which are used in great quantities in certain parts of the country.

The increasing importance of rice. Rice is another crop which in late years has grown steadily in importance. Rice requires a moist, warm season and can be grown only where the soil is rich and the land so level that it can be flooded easily during much of the growing season. These conditions are found in the lower plain of the Mississippi and in the flat coast lands of eastern Texas. Louisiana (Fig. 157) leads in production, Arkansas ranks second, and Texas third.

For several reasons there has been a steady increase in the growing of rice. People are using more and more rice each year, and it is an advantage to have it raised near at hand in our country instead of having to depend upon rice imported from eastern Asia. In the great rice-growing, rice-eating countries of Asia the crop is produced entirely by hand labor. In our country, by flooding the rice fields in the growing

Courtesy U. S. Department of Agriculture

FIG. 157. **Harvesting rice in southwestern Louisiana.** Notice that the binders shown here are similar to those used in the wheat fields of the North. Before harvest time the water is drained from the rice fields. Can you tell what effect this has on the ground? Try to learn all the reasons why rice is grown only on level land. Why are the rice fields in our country larger than those of Asia? What is the rank of the United States among the rice-producing nations of the world? (Fig. 447.)

season and draining them before the harvest, the work can be done by machinery. As a result, so much rice is produced today that the United States now exports about one-third of the rice raised and imports only a very small amount.

Other important field and garden crops. In Virginia, North Carolina, and Tennessee, the more northerly states of this group, tobacco is an important crop, especially in the Piedmont section.

Peanuts are also grown widely throughout the South, especially in Alabama and Georgia. This crop is constantly growing in importance, for each year greater quantities of peanuts are being used. Peanuts are sold almost everywhere in this country, but the greater part of the crop is used in making peanut butter and oil. Peanuts, like beans and peas, grow in pods, but the stems bearing the pods burrow into the soil and the peanuts grow in the ground. Since the leaves and stalks make excellent feed for animals, all parts of the plant can be used.

Another crop widely distributed in the South is that of sweet potatoes. This crop is especially adapted to the soils of the Coastal Plain. The people of the South use sweet potatoes just as the people of the North use white, or Irish, potatoes. Large quantities are sent to northern markets, and part of the crop is canned.

In all the southern states bordering the Atlantic or the Gulf the growing of vegetables and small fruits is a thriving industry. Especially profitable are those vegetables and fruits which can be sold in northern markets in the early spring and summer before northern-grown products are ready. Both sweet and white potatoes, many other kinds of vegetables, melons, strawberries, and other fruits are raised. Quick transportation by train or by boat brings these products into the northern markets in excellent condition.

Fruits grown in the South. Georgia is famed for its early peaches (Fig. 42), just as are New Jersey and Connecticut for their peaches which ripen later in the season. On the sloping land of the Piedmont and Blue Ridge in Virginia, the raising of apples is developing rapidly. Virginia apples, which are specially noted for their fine quality, are now exported to Europe (Fig. 138).

The central and southern parts of Florida, with their subtropical climate, have become great centers for the growing of oranges, grapefruit, and other citrus fruits (Fig. 158). In the extreme southern part of Florida bananas, pineapples, and other fruits which

Publishers Photo Service

FIG. 158. **Shipping grapefruit at Tampa, Fla.** By means of an endless track the boxes of fruit are easily loaded into the hold of this ship, which is probably bound for Europe. How do you think fruit is usually shipped from Florida to our northern markets? Explain your answer.

FIG. 0158. **A milk condensery at Starkville, Miss.** This milk condensery was one of the first to be built in the state. How can you tell from the picture that it is doing a good business? Find Starkville on your map. What other occupations do you think are carried on here?

will not stand frost are grown. The production of these fruits, however, is not important as compared with that of citrus fruits, in which Florida ranks with California (Fig. 231).

Because citrus fruits have come to be considered a most healthful food, there has been in recent years a great increase in their use. Northern markets require an enormous quantity of citrus fruits delivered regularly.

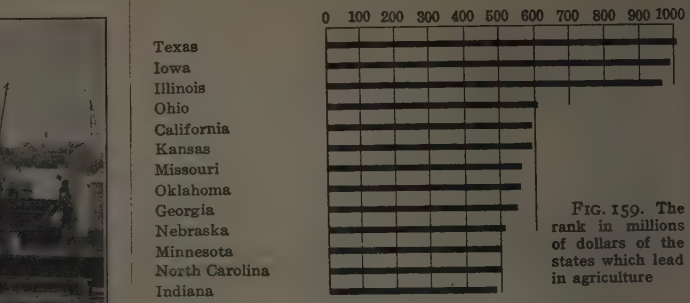

FIG. 159. The rank in millions of dollars of the states which lead in agriculture

Such demands are insuring the success of the orange, grapefruit, and lime groves of central Florida.

Because of favorable soil and climate, many other crops are grown in the South, but those mentioned are the most important. The total value of these crops is so great that the South ranks as the second most important agricultural region of the country (Fig. 159). Everywhere better farming methods and new crops are being introduced, while home markets for certain products are developing in the rapidly growing cities of this region. The future of agriculture in the South promises, indeed, to be most successful.

The increasing importance of the animal industry. We have already seen that animals are raised on most farms of the South because they are needed to help in the work or because they are valuable for their food products. In the agricultural section great numbers of mules and horses are used in farm work, while the western section, with its dry climate and short grasses, is well adapted for grazing. In the agricultural states dairy cattle are raised increasingly, so that more milk is produced, and milk condenseries (Fig. 0158) are being established. Mules, because better able to work in the warm, moist climate of the South than horses, are much used. Since there is a steady demand for mules, they are raised on many large farms to be sold to smaller farms and to army posts. Texas leads the country in the raising of mules as it does in the raising

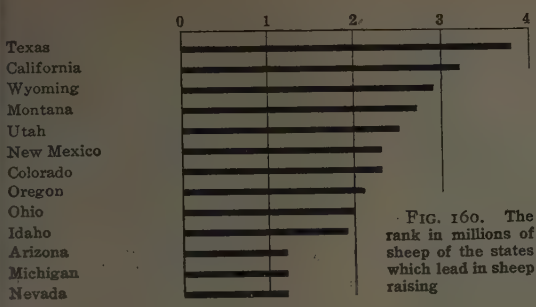

FIG. 160. The rank in millions of sheep of the states which lead in sheep raising

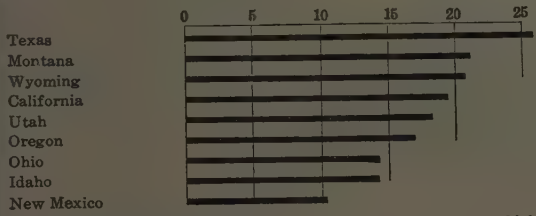

FIG. 161. The rank in millions of pounds of the states which lead in the production of wool

of cattle and sheep and in the production of wool (Figs. 160, 161, and 162).

When the Great Plains lying in the western part of this region were first used for grazing, the cattle were wild and wandered here and there in search of pasture. Twice a year they were rounded up by the cowboys and branded or marked so that the various cattlemen could know their own cattle. Today cattle raised in the grazing section are of far higher grade and are better fed and cared for. When almost ready for market, they are sent to richer pastures where they are fattened. Then they are shipped to the great stockyards in Chicago, Kansas City, Omaha, and other important meat-packing centers.

The dairy cows now raised on the farms of the South are also of a much higher grade than those raised a few years ago. They are better cared for and produce larger quantities of milk. In these states, where the winters are not so long and cold as they are in the North, cattle can be kept out-of-doors almost the year round. A farmer therefore does not need the warm buildings that are necessary in the North.

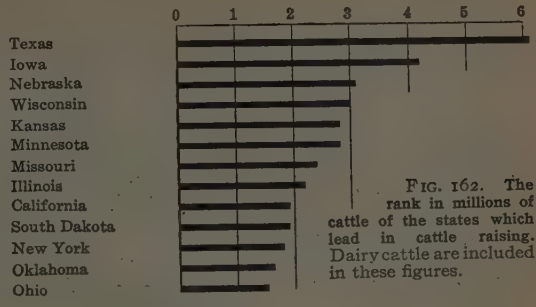

FIG. 162. The rank in millions of cattle of the states which lead in cattle raising. Dairy cattle are included in these figures.

66. THE NATURAL RESOURCES OF THE SOUTH

THE LESSON FORECAST

1. Why the making of steel is important.
2. Where petroleum is secured, and how it is used.
3. Why phosphates, aluminum, and sulphur are valuable products.
4. Where forests are found, and their important products.

Where steel is manufactured. The South is fortunate in possessing very rich mineral resources, great forests, and much natural water power. Of its varied mineral deposits the most important are coal and iron ore (Fig. 95). Coal is found in the Plateau in Tennessee, and iron ore in many sections of the Great Valley east of the Plateau. Limestone, used in manufacturing steel, is found close to the iron-ore deposits. Thus the smelting of iron has developed in many cities in or near the Great Valley, but the leading steel-making city is Birmingham, Ala. Conveniently located near vast supplies of iron, coal, and limestone, it is one of the greatest steel-producing centers not only of this region but of the entire country. The products of its mills are used chiefly in near-by cities which because of their rapid growth need much steel.

Great abundance of petroleum. Another of the valuable rock products of the South is petroleum, or crude oil, found especially in the Coastal Plain sections of Texas and Louisiana and in Oklahoma (Fig. 95). In

Ewing Galloway

FIG. 163. **Mining phosphate rock in southern Florida.** So much rock has been removed that the water seeping into the quarry has made a small lake. To reach bed rock the dredge must now go more than twenty-five feet below the surface of the water. Have you ever seen a dredge at work? Can you explain the process?

After all the dirt and sand are removed, the pebbly phosphate rock is shipped to Belgium. It is there refined into superphosphate, much of which is shipped to the United States. Can you name one of the chief uses of phosphate?

production of oil Texas and Oklahoma are exceeded only by California (Fig. 235). The crude oil is used chiefly in the production of gasoline and kerosene, for which the demand, already great, is constantly increasing the world over. Because of the steadily growing numbers of automobiles and airplanes that are being used, oil resources are now extremely valuable.

Phosphate, aluminum, and sulphur. Other valuable mineral products of the South in great demand are phosphate, aluminum, and sulphur. Phosphate, much used as a fertilizer by farmers, is found in the Coastal Plain sections of Florida (Fig. 163) and South Carolina and in middle Tennessee. Bauxite, an ore from which aluminum is smelted, is found in Arkansas, Georgia, Alabama, and Tennessee. Aluminum is a very useful material, not only because it is both strong and light, but because it will not rust. Each year it is being used in greater quantities in making cooking utensils, automobile bodies, wire, and many other things. The smelting is done in the South, and the aluminum is then sent to the North to be refined and used in manufacturing. Sulphur, which is used in making sulphuric acid, needed in certain kinds of manufacturing, is found in the Coastal Plain sections of Louisiana and Texas. It is easily secured by forcing steam down into the rocks to great depths. The melted sulphur is pumped to the surface, where it is cooled and solidified and then shipped away.

The abundance of water power. The greatest natural resource of the South, however, is its swift streams, which can be made to furnish electric power. The numerous large rivers with their many natural falls are well supplied with water from the higher mountain regions. Many great power plants have already been built in different parts of these states. These plants are connected by transmission wires, so that if anything goes wrong at one plant others can be drawn upon. In this way the power needed for mills, railways, and lighting is always available. Water power has been developed rapidly throughout these states, but there is still an abundant supply going to waste (Fig. 512). Some day this, too, will be harnessed and put to work.

Why the forests of the South are specially valuable. The forests of the South are prized not only for their supplies of lumber but also for their beauty. The higher slopes of the mountains are covered with hardwood

Courtesy Chamber of Commerce, Tampa

FIG. 164. **Loading lumber at Tampa, Fla.** Every week hundreds of thousands of feet of lumber are shipped from this port to Mexico and the West Indies. Most of this lumber is southern pine. Besides lumber, what other products are obtained from southern pine? What are these products called, and why?

The leading imports at Tampa include tobacco from Cuba and such hardwoods as mahogany and rosewood from Central and South America. Can you find out what use is made of these woods? Can you tell why Tampa is especially well located for trading with the Gulf ports and with Central and South America?

forests, some of which are being cut for lumber for the various manufactures in the Great Valley. Great areas, however, are being kept untouched either by their owners or by the government. Among such forest areas, especially in the mountains of North Carolina and Virginia, are found many pleasure and health resorts.

In the Coastal Plain area the poorer stretches of soil are covered with pine forests from which come great quantities of lumber for building purposes and also supplies of turpentine (Fig. 164). Turpentine, used in making paint, is an oil secured from what is commonly known as long-leaved pine trees. At one time this region produced large quantities of naval stores, that is, tar and pitch as well as turpentine. In the days of wooden ships these materials were used to calk or fill the cracks between the planks in order to make the ships water-tight. Although still produced extensively, naval stores are not so important today as they once were.

Because of the warm, moist climate of the southern Coastal Plain, the forests there are very different in appearance from the pine and hardwood forests farther north. One of the best known and most valuable trees of the southern forests is the cypress. It is valuable because the wood when exposed to the air does not grow old and decay or weather so rapidly as do most other kinds of wood.

In the alluvial plain of the Mississippi are found extensive forests which furnish much valuable lumber. Southern forests have not been cut over so closely as have the northern forests, and so this region has a vast amount of forest wealth available for future use.

67. DEVELOPMENT OF MANUFACTURING IN THE SOUTH

THE LESSON FORECAST

1. Importance of the Fall Line to manufacturing.
2. Why cotton manufacturing is increasing in the South.
3. The manufacturing of tobacco and of sugar.

Reasons for the growth of manufacturing in the South. Manufacturing on a large scale is not yet widely carried on in the South. But in many cities, particularly in Arkansas, Tennessee, North Carolina, Virginia, and Texas, manufacturing is increasing. This is true especially of the products made from materials found locally, for which there are

Southern Air Service

FIG. 165. **Woodside Cotton Mills, Greenville, S. C.** There are twenty-eight textile mills in this city, known as the textile-manufacturing center of the South. Much cotton is raised in the vicinity of Greenville. It is claimed that this is the only place in the world where cotton can be followed through every process from the growing of the staple in the fields to the turning out of the finished garment.

Locate Greenville on the map. Where do the workers live? Where do you think the power for operating this factory is secured? What advantages have the cotton mills of the South over those located in New England?

near-by markets. The most rapid development, however, is found in the eastern part of the Cotton Belt. Here where power is available along the Fall Line, especially in Georgia and the Carolinas, are many cities which have become important centers of cotton manufacturing (Fig. 165). Atlanta, a great railroad center, is the leading city of this section.

Advantages of the South in manufacturing cotton. As we have already learned, cotton manufacturing was once restricted practically to the northern states and especially to New England. But in the South the cotton mills are located nearer the supply of raw material, abundant power is at hand, the climate is less severe, and there is plenty of cheap labor to be had. Consequently this section is rapidly forging ahead as a textile-manufacturing center, and many northern manufacturers have built cotton mills in the South.

How manufacturing is helping the South. In almost every railroad town in the Cotton Belt are found cotton gins (Figs. 147 and 154) and compresses. Here the cotton as it comes from the fields is ginned, or separated from the seeds, and pressed into bales for shipping. The cottonseed, once thrown away, has long since proved most useful, and the cottonseed-oil industry is a thriving one. Among the most important by-products of this industry are cottonseed meal and fertilizer. The markets for cottonseed meal, which is much used as feed for cattle, are mostly in the North, and the demand is so great that it usually brings a good price.

Other kinds of industries which depend upon the local supply of raw materials include the manufacture of tobacco, centered especially at Richmond, Va., and Durham and Winston-Salem, N. C. At Tampa and Key West, Fla., great quantities of cigars are made, mostly, however, from Cuban tobacco which is imported from Havana. Sugar refining is carried on both in and about New Orleans.

Manufacturing is increasing so rapidly in the South that this region can no longer be spoken of only as an agricultural one. Today the products of the mills, as well as those of the farms, the forests, and the mines, are greater than are needed for use in the South. Hence its commerce, both domestic and foreign, is increasing rapidly.

68. THE CITIES, THE PEOPLE, AND THEIR PROBLEMS

THE LESSON FORECAST

1. The chief ports of the South.
2. Why New Orleans has become a great city.
3. How Galveston and Houston rank as shipping centers.
4. Reasons for the growth of Norfolk.
5. Some river cities, their location and growth.
6. Why there are fewer large cities in the South than in the North.
7. Why there are many pleasure and health resorts among the mountains.
8. Places of historic interest.
9. Problems of agricultural development.
10. Problems of trade development.
11. Why the Mississippi River is a serious problem.

Coastal cities of the South. The principal ports of the South are New Orleans, Galveston, Houston, Mobile (Fig. 149), Port Arthur, Savannah, Charleston, and Norfolk. New Orleans, although a hundred miles up from the mouth of the Mississippi, is the leading port, handling not only cotton exports and manufactured goods from the northern cities, but also tropical imports, especially coffee and bananas. A ship canal at New Orleans connects the river with Lake Pontchartrain (Figs. 166 and 167). This canal offers facilities for handling a volume of trade as great as that passing through New York Harbor. New Orleans, beautifully located in a great bend of the Mississippi,

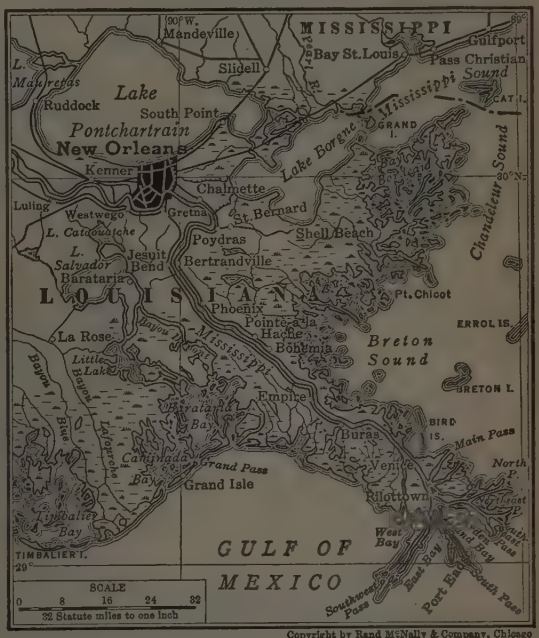

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FIG. 167. **New Orleans and surrounding region.** Note the location of the city between a great bend of the Mississippi and Lake Pontchartrain. Find South Pass. How far is it from New Orleans? Why was not the city built upon the delta? What are the advantages of New Orleans for trade?

Ewing Galloway

FIG. 166. **The new ship canal at New Orleans.** A street bridge has been raised here for the passage of a steamer through the canal. This recently constructed waterway extends across the city from the Mississippi River to Lake Pontchartrain, a distance of five and a half miles. See if you can find this canal (Fig. 167).

The canal provides about twelve miles of additional water front with greater anchorage for ships and improved facilities for handling cargoes. It also provides advantageous sites for industrial plants. Can you name all the navigable rivers which lead to the wharves of New Orleans?

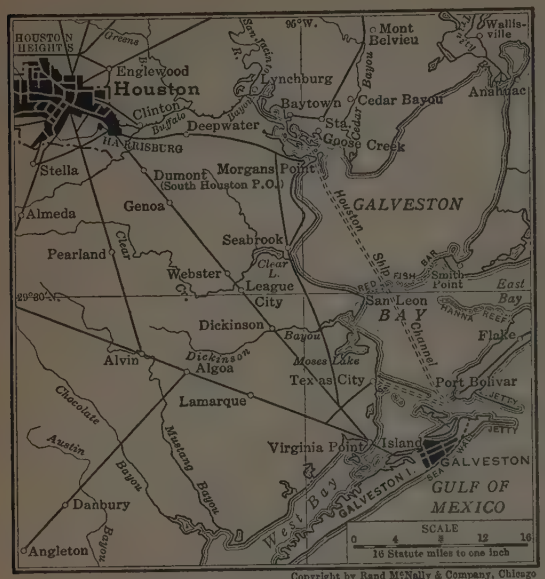


FIG. 168. **The cities of Houston and Galveston.** Note the location of Houston. How was it made possible for ocean-going vessels to reach the city? Trace the course of a ship sailing from the Gulf of Mexico to Houston. Find Texas City. Do you think its position is favorable for commerce and trade? Explain.

has much to attract and interest visitors. Many of the early settlers there were French, and in the older sections of the city French is still spoken, as it is in many of the parishes or counties of Louisiana.

Galveston, Tex., is located on a harbor formed by a long, sandy island a short distance from the mainland. Because the city lies so near the cotton-growing section of Texas, it has long been one of the leading cotton ports. It is now connected by a ship canal with Houston, which has good railway connections with the cotton-growing area. So the cities of Houston and Galveston (Figs. 168 and 169) together form a great shipping center with more trade in some years than any other city in the entire country with the exception of New York.

Mobile, Ala., is a Gulf port with a fairly good harbor (Fig. 149). Because of its favorable location near the cotton-growing and agricultural regions, as well as near the

Courtesy Chamber of Commerce, Galveston

FIG. 169. **A great rail and water terminal at Galveston, Tex.** This passenger and freight terminal, four city blocks in length, is used by one of the sixty-seven steamship lines calling at Galveston. The terminal is served by the belt railroad which connects the four trunk-line railroads serving the city. Where do you think the grain comes from that is stored in the grain elevators shown in the background? What products do you think are shipped into Galveston? What are the chief products shipped out?

"International Newsreel"

FIG. 170. **The harbor at Norfolk, Va.** This view shows a small part of Norfolk Harbor which with the channel of Hampton Roads forms one of the best anchorages in the country. Find out what large bay and estuaries lie back of Hampton Roads.

In the foreground are seen two warships belonging to the United States Navy. How does this waterway serve to protect the city of Washington, D. C.?

manufacturing centers of the Coastal Plain, it has become a busy shipping center.

Norfolk, Va., located on Chesapeake Bay, is easily reached from the ocean. It ranks high as a coal port. The coal is brought by rail from the mines of West Virginia and shipped by water to northern cities. Fast steamships connect Norfolk with New York City, and it is therefore a center for the shipping of vegetables and fruits. Norfolk has excellent facilities for accommodating many vessels at one time. It is therefore much used as a harbor for United States government vessels (Fig. 170) which often assemble there in great numbers.

Other significant ports are Savannah, Ga., Charleston, S. C., and Key West and Tampa, Fla., all shipping centers for products of the near-by regions. Tampa and Key West, lying near Cuba, have a large trade with that country.

The river cities of the South. Along the Mississippi River are many cities which both by water and by rail carry on a large trade in cotton, sugar, lumber, and other local products. The largest of these river ports are Memphis, Tenn., Little Rock, Ark., and Vicksburg, Miss. They receive coal and other products from the upper Ohio and the Mississippi and distribute them to the near-by towns.

Some important inland cities. There are many inland cities in the South which are busy centers of trade dependent for their prosperity upon the products of the surrounding regions. Atlanta, Ga. (Fig. 171), Chattanooga, Nashville, and Knoxville, Tenn., Dallas and Fort Worth, Tex., and Muskogee, Okla., are the largest of these inland cities. But scattered throughout the Atlantic Coast states are hundreds of other thriving railway towns with a flourishing and constantly growing trade.

While the cities of the South are fewer in number than in New England and the Middle Atlantic states, they are steadily increasing in number, size, and importance.

Why the South attracts visitors. There are pleasure and health resorts and other interesting places in the South. Asheville, N. C., which is located in a region of high forested mountains, is both a winter and a summer resort. In the higher parts of Virginia are similar resorts, of which Hot Springs is possibly the best known. The extreme South has a most delightful winter climate and along the Gulf coast are many small cities much visited, especially during the winter months. Florida, however, ranks first as the most popular winter resort. Miami (Fig. 172) and Palm Beach, with their famous hotels and their many facilities for outdoor pleasures, are far famed as centers for winter visitors.

In this group of states, however, most of the beaches facing the Atlantic Ocean are

Courtesy Chamber of Commerce, Atlanta

FIG. 171. **An airplane view of Atlanta, Ga.** This view shows clearly the shipping facilities of the city. Note the great warehouse in the foreground and the number of railroad tracks and freight cars. Nine railroads enter Atlanta, which is a trading center for a large section of the South. Can you explain why Atlanta is sometimes called the Gate City of the South? What products do you think are sent out from Atlanta?

not such popular resorts as are the beaches in New Jersey and on Long Island. This is because the former are too far from large cities to be easily accessible to great numbers of people. Moreover, their location is such that they are neither cool enough for summer resorts nor warm enough for winter resorts.

Other places of special interest are the many historic towns important in early colonial days, of which Charleston, S. C., is one of the best known. Perhaps the most interesting place of all is the little village of Jamestown, Va., the site of the first permanent white settlement made in our country. The village has long been abandoned, but the ruins of the old church, of the early houses, and of the first cemetery are all being preserved and cared for.

Scattered throughout the Atlantic Coast states are many famous battlefields of the Revolutionary War and the War between the States. They are all of great historic interest, especially that of Lookout Mountain in Tennessee, and those in the northern part of the Great Valley.

People from the North find the South unusually interesting because of the differences in customs and ways of living, especially in the Cotton Belt. The different methods of farming, the various industries, and above all the picturesque sections of the Piedmont with its forested areas, its narrow valleys, and its swift streams, are all attractive to visitors.

Present and future problems. We have discovered that there are problems that must be solved in each section of the country if

Publishers Photo Service

FIG. 172. **A view in Miami, Fla.** The buildings seen in the picture are winter residences of people who do not enjoy the ice and snow of the North. See the location of Miami (Fig. 144). Give three reasons for the mild climate of Miami. What outdoor pleasures can be enjoyed here in the winter? Notice the large trees in the foreground. Do you know what kind of trees they are?

Ask some one who has spent a winter in Florida to tell you in what ways life there appealed more to him than life in his home town.

it is to be successful. In the South there are a few outstanding problems. As we have already seen, agriculture is changing in the southern states. The South is no longer interested only in cotton. Can it grow other products in sufficient quantities to supply its own people? Can it grow greater quantities of all the many crops it can raise, and find a good market for the products not needed at home? Can the negroes, most of whom have always worked for others, become good farmers working for themselves and owning their own property? Will the negroes find in the South all the opportunities they want for their development, or will they go in larger numbers to work in the cities of the North? These are a few of the questions people are asking about the agricultural development of the South.

Another problem of interest to the South is the effect the Panama Canal will have upon the trade with South America. The Canal has brought the cities of the South much nearer the countries of the west coast of South America. Will the demand in these countries for the products manufactured in our country increase manufacturing in the South, especially that of iron and steel goods? Will this demand make cities like Birmingham grow more rapidly? Will the ports of the South increase their imports from South America and continue to be distributing centers to other American cities?

But the greatest problem facing the South today is how to prevent the floods of the Mississippi which cause such great damage to life and property. This mighty river receives the drainage from a large part of the country. Millions of dollars have been spent to build levees, or banks (Fig. 174), to keep the river from overflowing during the time of flood.

In spite of all man has been able to do, however, serious floods occur in the Mississippi every few years (Fig. 173). Property is damaged, live stock is drowned, people are made homeless, often the flooded land is rendered useless for a long time, while the cost to the states and to the country is stupendous.

Can the upper Mississippi be better controlled so that the mighty volume of water in its lower course can be carried to the sea without danger of destructive and costly floods? The Mississippi River is a problem which interests the entire country, as is shown by the fact that the United States government has made the control of floods a national undertaking.

FIG. 174. **Levee along the Mississippi River at Greenville, Miss.** A few hundred yards down the river is the wharf at which the boats land. What cargoes do you think they take on here at Greenville? Give the reasons for your answer.

Can you tell why no houses have been built along the west side of the street here?

Notice the tree standing up out of the water at the left. What does it show you about the condition of the river? Why do you think the levee has been built back from the banks of the river here?

FIG. 173. **A scene near Lakeport, Ark., not far from Greenville, Miss.** A large crew is rushing to raise and strengthen the levee in time of a great flood. What materials are they using for this purpose? What would happen to all the land behind the levee if it should break?

SOME RELATED PROBLEMS

1. How do the needs of the cities of the North affect agriculture in the South?
2. Why was tobacco the first commercial crop of importance in this region?
3. How was the Mississippi River made navigable for large vessels up to the city of New Orleans?
4. How would the invention of a successful cotton picker affect agriculture in the South? Give reasons for your answer.
5. Why is it better for Cotton Belt farmers to raise more food crops, instead of putting all their land in cotton?
6. Why is truck farming more profitable in the South than in the North? At what time of year do you think prices are highest?
7. If you owned a steel mill in Birmingham, what products would you manufacture? Why? Where would you expect to market them?
8. Why are the banks of the Mississippi higher than the land farther back?
9. How are the cities along the Gulf coast benefiting from the Panama Canal?
10. Why are the chief cities of the southern Appalachians found in the Great Valley?
11. Why is dairying not so important upon the Cumberland Plateau as it is upon the Allegheny Plateau?
12. Why is it difficult for the United States to compete with Cuba in the production of sugar cane?

THE NORTH CENTRAL STATES

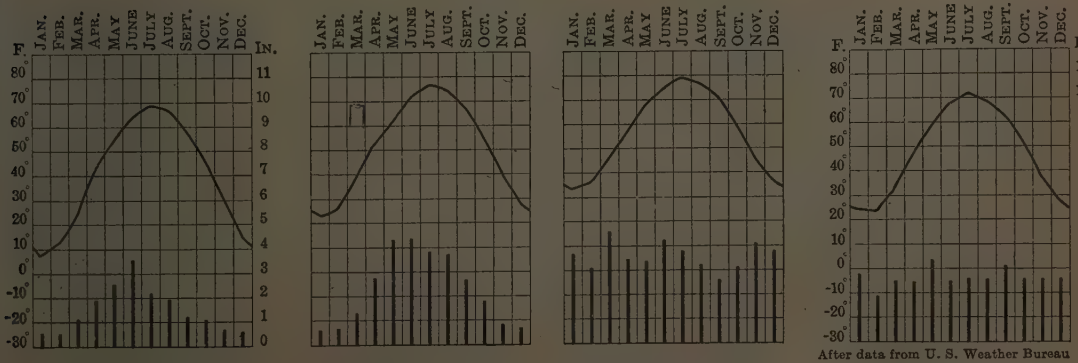
69. WHAT THE MAPS, TABLES, AND GRAPHS SHOW

Problems:

1. What features shown on the maps indicate that the North Central states are a region favorable for agriculture? (*a*) What is the character of the land surface? Why is such a region easily farmed? (*b*) In what portion of this region is the rainfall sufficient for growing crops? At what time of the year does most of the rain come? (*c*) Where is the area of least rainfall? (*d*) Why are railroads easily built in this group of states? (*e*) What crops are grown? What animals are raised?
2. What large rivers drain this great region? (*a*) What rivers flow into the Mississippi from the east? from the west? (*b*) What states drain in part to the Atlantic through the Great Lakes and the St. Lawrence? (*c*) What river flows into Hudson Bay? (*d*) What state is partly drained to the Atlantic through the Potomac River?
3. What climatic differences may account in part for the production of winter wheat in Kansas and of spring wheat in the Dakotas? (*a*) When is winter wheat sown? when spring wheat? (*b*) Where are the winters longest and most severe? Might this account for the differences called for in the problem? (Figs. 94, 102, and 103.)
4. Why are most of the large cities located near the Great Lakes? (*a*) How many large cities are situated on the Great Lakes? (*b*) How many are on the Mississippi? How many are on the Ohio? (*c*) What are the chief industries found in the Great Lakes cities? (*d*) Where are the markets for manufactured products? (*e*) Why are the Great Lakes cities well located for trade? (*f*) Why is not the Ohio River a trade route to the East?
5. How can the climatic differences between Bismarck, N. Dak., and Grand Rapids, Mich., be explained? (Figs. 86, 175, 495. 497, and 498.)
6. By what water routes can wheat be shipped from Duluth or Chicago to Liverpool, England? by what rail and water route?
7. Why would a canal from Chicago to Toledo help transportation?

Questions:

1. Which states of this group border the Mississippi River?
2. What states lie wholly west of the Missouri River? What states are crossed by it?
3. What states touch the Great Lakes?
4. Which state lies entirely south of the Ohio River?
5. What highlands are found in this group of states?



Bismarck, N. Dak.
Alt. 1,674 ft. Temp. 40.5°
Rainfall 17.64 in.

Lincoln, Nebr.
Alt. 1,189 ft. Temp. 50.8°
Rainfall 27.51 in.

Evansville, Ind.
Alt. 431 ft. Temp. 57.0°
Rainfall 43.16 in.

After data from U. S. Weather Bureau

Grand Rapids, Mich.
Alt. 646 ft. Temp. 48.1°
Rainfall 31.47 in.

FIG. 175. Average annual temperature and rainfall for four cities of the North Central states

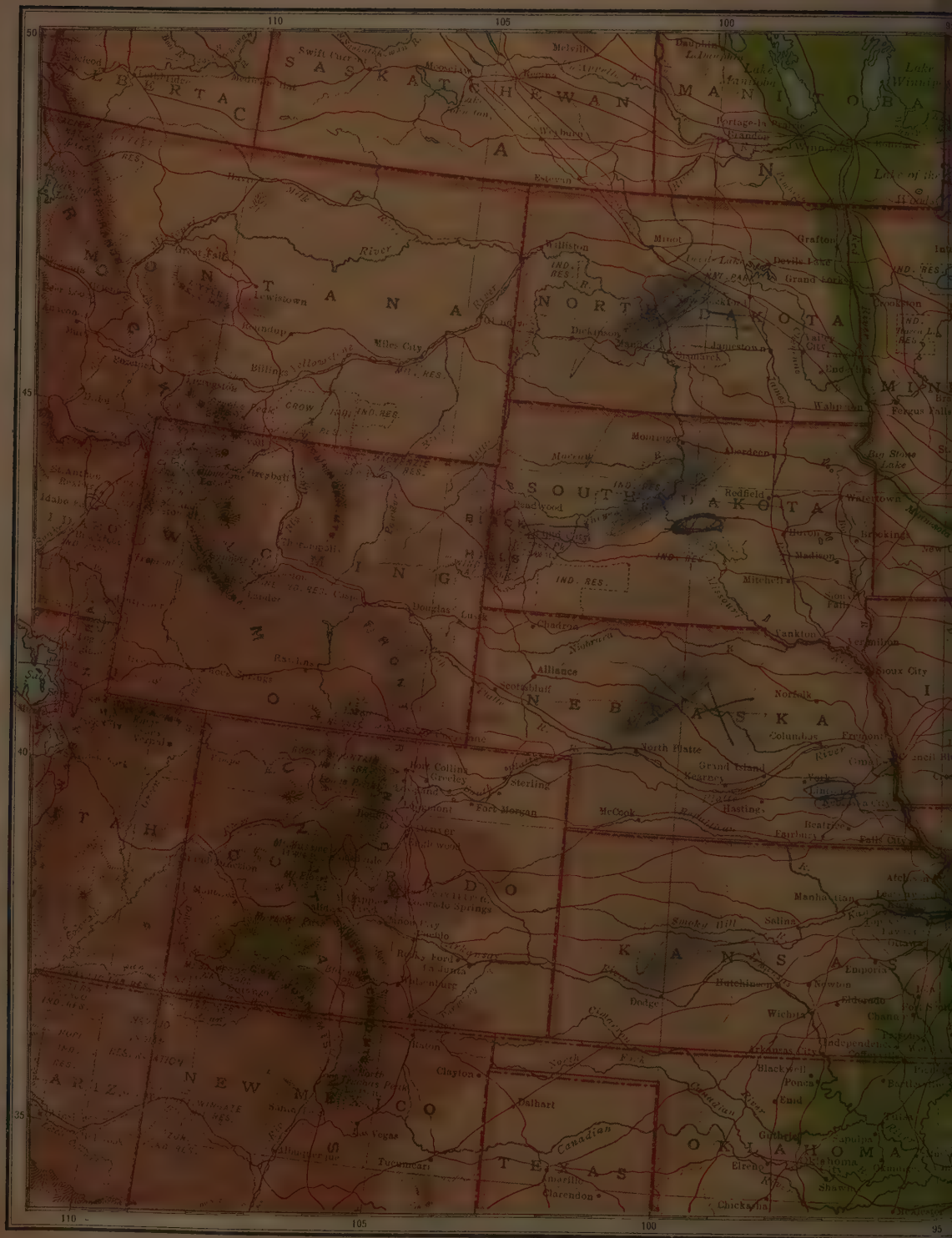
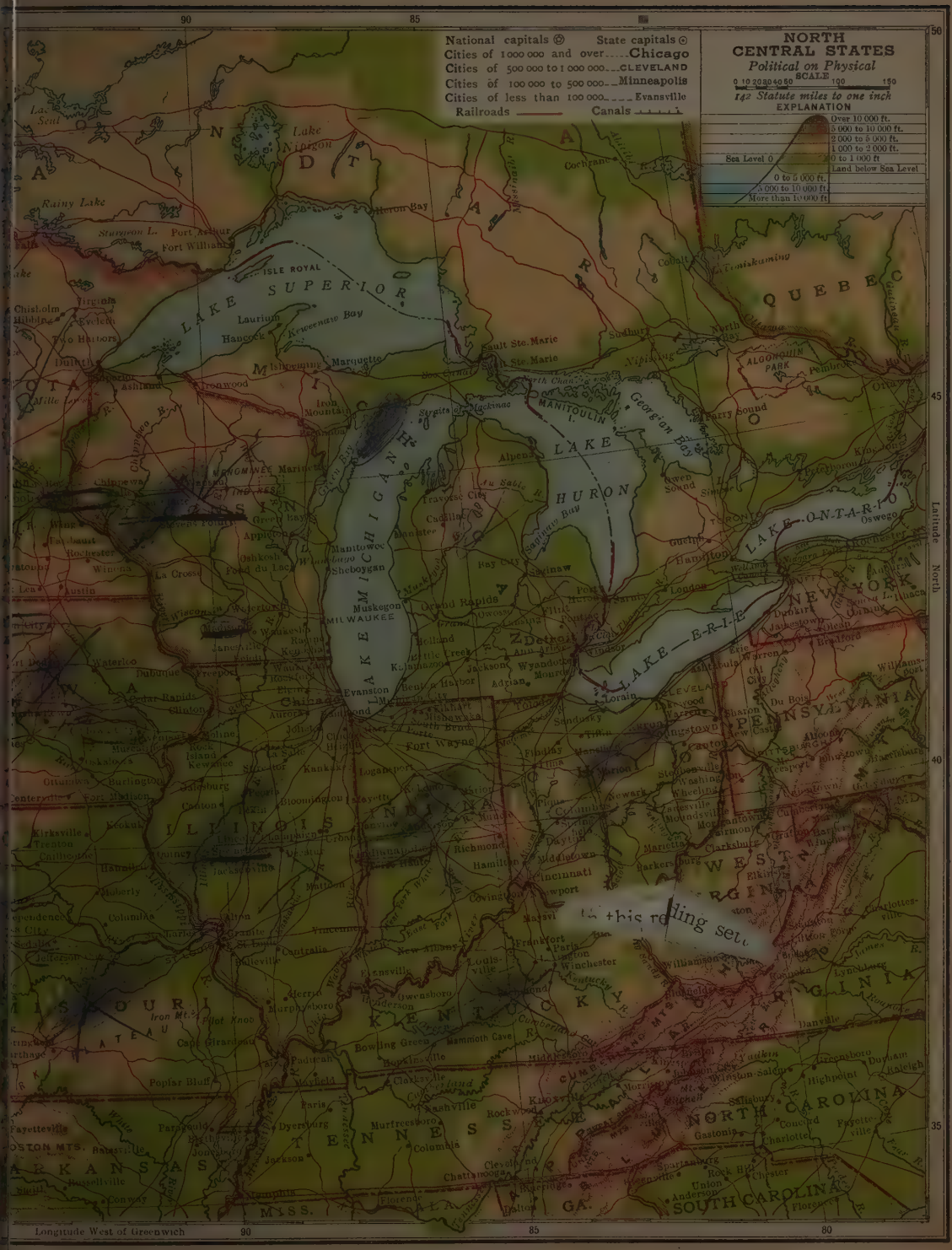


FIG. 176. A Map of th



In this reading sec

rth Central States

6. Which are the chief corn-growing states?
7. Which states produce most of the winter wheat?
8. What states lead in the mining of iron ore? in the production of coal?

Minimum essentials in location:

On an outline map be able to name and locate the following: all the states and their chief cities: four great lakes; six rivers; corn, winter-wheat, and spring-wheat areas; these cities: Peoria, Grand Rapids, Gary, Racine, Wichita, Duluth, Minneapolis, St. Paul, Cincinnati, Fort Wayne, Kansas City, Mo., Columbus, Toledo, and Omaha.

70. THE MIDDLE WEST, OUR GREATEST AGRICULTURAL REGION

THE LESSON FORECAST

1. Why the early settlers came to this region.
2. Why the first settlements were made along the rivers.
3. The importance of the Great Lakes as a waterway.
4. How the occupations of this region have changed.
5. Manufacturing and trade of this region.

The coming of the first settlers. The first settlers in the North Central states came from the Atlantic seaboard by several different routes. Some crossed the Cumberland Plateau by the trail marked out by Daniel Boone, the great hunter and explorer. Others crossed the mountains and journeyed down the Ohio River, found settlements along the stream on the rich lands now included in Indiana, Illinois, Kentucky, and Ohio (Figs. 177 and 178). Still others followed the Mohawk Valley and settled in central and northern Ohio.

The kind of land the settlers found. These first settlers were mainly farmers seeking good land, which they found everywhere in what is now known as the Prairie region of the country. This region, flat and rolling with few steep slopes except along the banks of streams, was covered with deep, rich soil which supported a luxuriant growth of wild grass (Fig. 82). Trees were few except along the streams, and the ground could be easily plowed and cultivated. Buffaloes in great numbers roamed over these rich grasslands and over the drier regions farther west. This showed the settlers that the land would furnish good grass for cattle, and with cultivation would be excellent for farming (Figs. 177 and 178).

Where the settlements were made. Most of the first settlements were built along the Ohio River, and the products from the region were shipped on flatboats that floated with the current down the Ohio and Mississippi to New Orleans. Needed supplies, however, were brought in over the mountains from the East, for it was difficult to pole flatboats up these streams against the current.

Later, as the settlements pushed westward, the Great Lakes came to be used more and more as a trade and travel route. Many of the little villages or forts which sprang up along their shores are today large and flourishing cities. Only a little more than a hundred years ago the city of Chicago, now one of the largest cities in the world, was a village with only a few streets. Even as late as 1840 it had but 5,000 inhabitants.

Occupations carried on in this region. This great rich area, as we have just said, was once grassland over which only recently the Indians and buffaloes roamed. Today, because of its vast resources and industries, it ranks as one of the most prosperous regions of the world.

The middle western or North Central states are not only a great agricultural section but also a part of the manufacturing region that extends from Lake Michigan eastward to New York, Pennsylvania, and New England. It is in this industrial region that most of our largest cities are to be found and in which the greater part of our manufacturing and trade is carried on.

Courtesy Department of Agriculture, Kentucky

FIG. 177. **In the blue-grass region of Kentucky.** Most of the cattle grazed in this region have been brought from the western plains to be fattened here for market. Two-year-old cattle make the best feeders. When fed corn or cottonseed meal in addition to pasturage, these animals are ready for market in from six to nine months. Can you explain why this method of fattening has proved to be a profitable one?

Allen

FIG. 178. **Preparing the seed bed for grain in Indiana.** Such great stretches of level ground as shown here make it easy to use large farm machines. By using his tractor to draw a smoothing harrow and a packer over his field, this farmer will quickly get the ground in fine condition for the sowing of grain. Six or eight horses and two men would be needed to do the same work without the tractor.

What are the advantages in farming with such machinery? Can you think of any possible disadvantages in this method of farming?

71. WHY THIS REGION LEADS IN AGRICULTURE

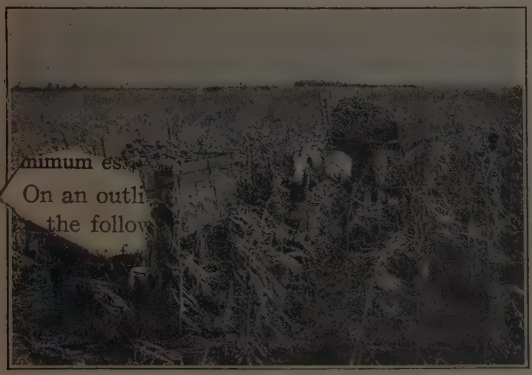
THE LESSON FORECAST

1. Two reasons for the importance of agriculture in the Middle West.
2. Conditions upon which the success of agriculture depends in this section.
3. How the level surface in this region helps farming.
4. How the climate favors the growing of grain.
5. Special conditions which favor the growing of wheat.
6. How corn helps to make this a famous live-stock producing section.
7. Rank of the different states in the production of animals.
8. Why the production of corn and wheat encourages the dairying industry.
9. Special conditions favorable for tobacco and fruit in this region.
10. Where in this region flax is a leading crop.

Conditions specially favoring agriculture in this region. Of the many occupations carried on in this region, the most important by far is agriculture, which is successful everywhere except in the extreme western part. The agricultural products of the Middle West are enormous in quantity.

As we have already seen, the success of agriculture anywhere depends upon good soil, upon a favorable climate especially during the growing season, and upon the cheapness with which the various products can be marketed.

Nearly everywhere in this group of states the soil is deep and rich. Most of the region



Courtesy U. S. Department of Agriculture

FIG. 179. **Harvest time in the Corn Belt.** It is cheaper to husk corn from the stalks standing in the field than to husk it later from the shock (Fig. 181). Each wagon holds from thirty-five to forty bushels of husked corn. Find out how many wagonloads of corn is a good day's work for one man.

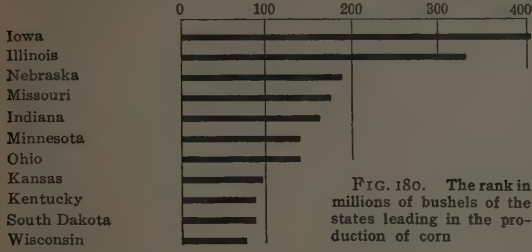


FIG. 180. **The rank in millions of bushels of the states leading in the production of corn**

lying east of the Missouri and north of the Ohio is covered with deposits left by the great glacier long ages ago. In the eastern part of this region the glacier left many bowlders scattered over the rough surface and many lakes, some of which have become swamps. In Ohio, Indiana, and Illinois, where the surface is flat, these lakes gradually drained away, and today this section is mostly good farming land. But in Wisconsin and Minnesota, where the surface is rough, there are still thousands of small lakes.

Because much of the surface throughout this region is nearly level (Fig. 178) and can be easily tilled, large machines can be used in farming. Railroads and highways can be built in any direction, and consequently products can be easily carried to market. Besides the rich soil and the favorable surface, the warm, moist climate of the growing season aids farming, especially the

Courtesy U. S. Department of Agriculture

FIG. 181. **Husking corn from the shock.** This method is practiced in some sections of the Middle West and in the East. The fodder is used as feed for live stock. Can you state the advantages and disadvantages of harvesting corn this way rather than from the stalks in the field?

growing of such grains as corn, wheat, and oats (Figs. 179, 181, and 182).

Why this is the greatest corn-producing region of the world. The seven states from eastern Ohio west through Iowa to Nebraska form what is known as the Corn Belt, the greatest corn-growing region in the world (Figs. 62, 94, and 180). Corn is grown in every state in the Union, but is the chief crop in the states of the Corn Belt. Corn requires a warm temperature and an abundance of sunlight, with plenty of rainfall from June to September, and these conditions prevail in the Corn Belt region. The necessary rain comes mostly in occasional showers. Rarely is there a long period of drought. During summer the days are longer here than farther south.

Why wheat thrives throughout the Middle West. The winters in this region are cold and dry, and in the more northern states of Minnesota and North Dakota they are very severe. In these northern states, therefore, wheat, the principal crop, is planted in the spring and not in the autumn as it is farther south where the winters are not so severe. Spring wheat is nourished by the spring rains and is harvested in the late summer when the weather, as a rule, is clear and dry. The states of Minnesota and North Dakota

Courtesy North Dakota Agricultural College

FIG. 182. **A wheat field in the Middle West.** This wheat farm lies on the rich alluvial plain of the James River in North Dakota. If you look closely you can see a threshing machine at work in the center of this great field. What conditions do you think favor the growing of spring wheat in this region? (Sec. 48.) How can you explain the fact that the only trees to be seen are those around the farmstead? What natural vegetation did the early settlers find here? (Secs. 41 and 48).

lead the entire country in the production of spring wheat (Fig. 182).

Along the boundary line between North Dakota and Minnesota lies the Red River valley, a great wheat center which extends north into Canada. This valley, which is level and covered with deep black soil, was the bed of a lake during the time when ice covered the region farther to the north. This lake, which probably no man ever saw, is known as Lake Agassiz. The silts of this old lake floor form the rich soil so easily cultivated.

South of these states are the winter-wheat states, with Kansas ranking first in production (Figs. 21, 63, and 183). All through the region extending from Kansas eastward to the Atlantic coast winter wheat can be grown. It is also an important crop in the Corn Belt states and in Oklahoma and Texas. Winter wheat is planted in the autumn and harvested in the early summer, long before spring wheat is ready to be cut.

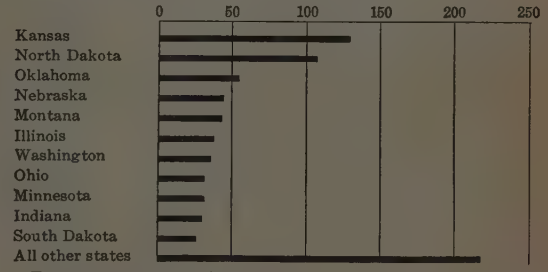


FIG. 183. **The rank in millions of bushels of the states which lead in the production of wheat**

Each year men are hired in great numbers to help harvest the wheat crop. Many of these men follow the harvest northward from the more southern states, sometimes going even into Canada, where the wheat is not harvested until late in August or early in September.

Wheat is one of the most important crops of the world because most people eat wheat bread. About four-fifths of the wheat produced is used in our own country. The remainder is exported, mostly to Europe.

Courtesy International Harvester Company of America

FIG. 184. **Threshing oats.** This is a farm scene in Iowa, one of the states which leads in the production of oats. The farm tractor is being used to run the threshing machine. Notice the log that has been placed in front of the big wheel of the tractor. Can you explain why it was placed there?

Can you explain why large quantities of oats are grown in the corn and wheat region? Can you tell how oats may be used in a crop rotation? What parts of the crop are used to feed stock? What part do we eat? From the labels on rolled-oats containers you can learn where this cereal is made.

Many countries in Asia, South America, and Australia raise great quantities of wheat for home use and to send to the densely populated sections of Europe. As the population of our country increases, we shall need more wheat for our own use and shall have less to export unless the crop in some way is greatly increased.

New land is being planted to wheat each year, and new methods by which more wheat can be raised to the acre are being employed. But the most satisfactory way of increasing the yield comes from growing new varieties of wheat which will thrive in the spring-wheat region, and which will also produce a larger crop and make better flour than did the varieties formerly planted. In these ways not only is the yield of wheat per acre being increased but the crops are being made more profitable.

The importance of oats. Because so many people use wheat as a food, we are perhaps more interested in the growing of it than in any other grain. But it is an astonishing fact that more oats than wheat are raised in the wheat states and yet little is said about the oats crop (Fig. 184). Oats thrive in the wheat climate of this region and can be harvested after the wheat in the winter-wheat region and before it in the spring-wheat region. Thus it is evident that oats make a profitable second crop on a wheat farm because the harvesting does not all need to be done at one time.

Large quantities of oats are made into the breakfast foods which are used so widely in our country. But the greater part of the crop is used for feeding horses and mules. Consequently Iowa and Illinois, which are among the leading states in production of oats, together with Kansas, lead in the raising of horses. Only Iowa surpasses Minnesota in production.

Why this is a great live-stock region. Corn, the greatest crop of our country, is used for food by man only to a small extent, and less than one per cent of the yield is exported. Most of the crop is used for feeding cattle, horses, and swine. More than half of the swine grown in the entire country are found in the Corn Belt states (Figs. 185 and 186). Here also are found nine of the ten states which lead in raising horses. Cattle are raised for food and for dairy products, nearly one-half of both the beef cattle and the dairy cattle in the country being raised in this section. In the production of beef cattle Iowa, Nebraska, and Kansas are

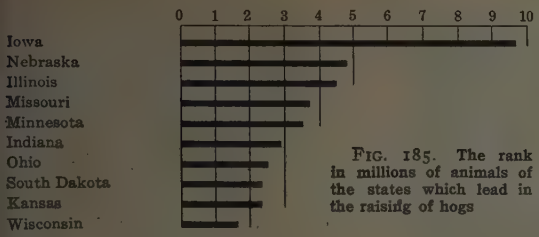


FIG. 185. The rank in millions of animals of the states which lead in the raising of hogs

outranked only by Texas, the largest producer of beef cattle in the entire country (Fig. 162). The live stock is shipped to great packing houses in near-by cities, chief among which are Chicago, St. Louis, Kansas City (Fig. 197), Omaha, St. Joseph, and Fort Worth. Here the animals are slaughtered, and not only is the meat prepared for market in our own country, but a great deal is sent abroad.

Reasons why dairying is a leading industry. Although dairying is important in most of the Middle West, Wisconsin, Ohio, and Minnesota lead in this industry (Figs. 187 and 188). In all the large cities of this group of states there is an immense daily demand for fresh milk which must be supplied from sources near at hand. Farther away from the cities butter and cheese are made, for these products, as we have learned, can be shipped long distances. Wisconsin leads in the making of cheese, and Minnesota in butter.

Dairying is successful in this region not only because the products can be marketed readily, but also because the climate and soil are so favorable for growing grass and corn. Not only is the grain of corn itself used as a food, either whole or ground into meal, but the plant is also used. The corn is cut green; then it is chopped and stored in high round tanks known as silos (Figs. 28 and 189). Corn used in this way can be grown where the season is too short for the grain to ripen; so here in the colder northern states cornfields are found just as they are in northern New England.

Allen

FIG. 186. **Young pigs on a feeding platform.** These pigs are being fed on corn stored in the crib beside the platform. It is better to feed pigs on a cement platform than on the ground. Can you tell why? Ask the butcher at the meat market how large hogs usually are when sent to market.

FIG. 187. **A herd of dairy cows.** This scene is typical of northern Illinois and of Wisconsin. These Jersey cows are grazing in a clover pasture which is rich in food value. Do you see any buildings in this picture which tell you that this might be a scene at a big dairy farm?

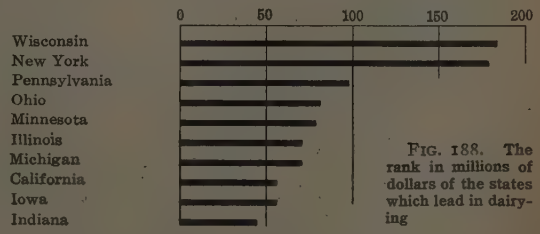


FIG. 188. The rank in millions of dollars of the states which lead in dairying

Another reason why dairying is successful in this section is because it lies near flouring mills. Only the inner parts of the wheat kernels are made into flour, the outer layers

Courtesy Kansas State Agricultural College

FIG. 189. **Cutting corn to fill a silo.** A close-up view of ensilage-cutting machinery and of the pipe through which the chopped-up corn is blown into the silo (Fig. 28).

The cornstalks are put through this cutting machine when nearly ripe but while the stalks and leaves are still green. Sometimes alfalfa, clover, and even sunflowers are preserved in the same way. Ensilage in a silo does not decay but remains green. Find out why.

Do you think silos are an advantage to the farmer in regions where there is no fresh grass during winter, or where the growing season is too short for corn to ripen?

being used mostly for cattle feed. Thus grass, corn, and grain for cattle can be raised close at hand, while the East must secure most of its grain for cattle feed from the flouring mills of the Middle West.

Other agricultural activities. In Ohio and Michigan, especially in the sections where the land is so rolling and uneven that it cannot be tilled easily, sheep are raised. But here there are no large ranches devoted solely to the sheep industry, such as are found in the far western states. Since, however, a great many farmers in these states keep small flocks, the number of sheep raised is large (Fig. 190).

The raising of tobacco is important in Kentucky, Ohio, and Wisconsin, especially in Kentucky, which produces about a third of the entire crop of the country. Tobacco requires a good soil and a short, but hot growing season. Since a slight frost kills it, tobacco must grow rapidly so that the plants may be cut and stored in the late summer.

Another valuable crop increasing rapidly in this region is that of sugar beets, from which is made a part of the great quantity of sugar needed in this country. Sugar beets thrive best in a moist soil with plenty of warmth during the earlier period of growth. While ripening, they need cooler weather but should be harvested before frost. Michigan, northwestern Ohio, and Nebraska are the states that lead in the production of sugar beets.

In the cooler northern states, Michigan, Wisconsin, and Minnesota, potatoes are a profitable crop, for they thrive best where the summer is cool and moist with no times of intense heat. These conditions are found in this group of states as well as in the northern states of New England and in New York.

In the drier sections of North Dakota and Minnesota flax is grown in great quantities. In Ireland flax is grown only for its fiber, used in making linen. Here flax is grown only for its seed, from which linseed oil and cake are secured (Fig. 40), just as cottonseed oil and cake are secured from cottonseed. Linseed oil is an essential part of paints, varnishes, and various floor coverings, and many other manufactured articles. The growing of flaxseed is a profitable industry which furnishes raw material for many manufactured products.

Michigan ranks high as a fruit-growing state, especially in the raising of pears,

Allen

FIG. 190. **A flock of sheep in the Middle West.** On many of the farms throughout this region there are wooded or rough and broken areas. Such areas cannot be used for raising crops but often make fine pasture land for sheep. Sheep will eat almost everything in their pasture and so are valuable in helping to check the growth of weeds. The flocks raised in this region are usually small. Find out why.

Do you see anything in this picture that suggests to you that this region was probably once all wooded?

apples (Figs. 138 and 191), peaches, and grapes. These fruits are grown in lower Michigan between Lake Michigan and Lakes Huron and Erie. Most of the winds which cross this section blow over Lake Michigan. Since water does not warm up so fast as land, the spring winds are cool and prevent the fruit trees and grapevines from making too much growth before the danger from late frosts is over. In autumn the winds from the lake are warm and there are therefore few early frosts in the fruit section. Other leading fruit states in this group are Ohio, West Virginia, and Illinois.

72. MINERAL AND FOREST RESOURCES

THE LESSON FORECAST

1. Where iron ore and coal are secured. How these ores are mined and transported.
2. Location and importance of the lead and zinc deposits.
3. The copper and other mineral resources of this region.
4. How the forests have been used.

Rich deposits of coal and iron ore. The North Central states are not only known as the greatest agricultural region of the country but are also notable as a manufacturing and industrial region. Industry and manufacturing depend upon resources that furnish power and the raw material to be made into finished goods. The most important raw material is iron ore and the most important source of power is coal. The North Central states are the richest in the country in these

FIG. 191. **Harvesting apples in Michigan.** Fancy grades of apples are boxed and bring high prices, but most apples are packed and marketed in barrels. Why must apples be carefully harvested? Make a list of as many different kinds of apples as you can. Try to find out where each kind is raised.

Ewing Galloway

FIG. 192. **Cars loaded with coal at Bluefield, W. Va.** This view shows part of the freight yards at Bluefield, the distributing center of the Pocahontas coal field. More coal is shipped from Bluefield than from any other point in the state.

Locate Bluefield on the map (Fig. 176). Why must all the coal be shipped out by rail? Find out and explain why it is easy to mine the coal in this region. What kind of coal is it? (Sec. 47, p. 84.) What do the great numbers of freight cars seen in the picture show about the amount of business carried on at Bluefield?

Ewing Galloway

FIG. 193. **An open strip coal mine near Danville, Ill.** Here the coal veins lie so close to the surface that when the loose soil covering is removed the coal is easily mined. The steam shovel seen in the background of the picture is removing the top soil, while the one in the front is digging out the coal.

Can you find out what is done with the loose soil covering that is removed from the coal bed? Learn whether it is impossible to mine deep-lying beds of coal in this way. How do you think an area that has been worked over in this manner will look? Would it make a pleasing landscape?

great natural resources. Coal is mined in six states of this group, and West Virginia ranks in production next to Pennsylvania, which leads all other states (Figs. 128, 192, and 193). Coal for power and for fuel is plentiful and easily secured.

About four-fifths of the iron ore that is mined in the United States comes from the region around the head of Lake Superior in the states of Minnesota, Michigan, and Wisconsin. Here the ore lies close to the surface of the ground, and in many sections can be removed as easily by steam shovels as can the glacial deposits which cover it (Fig. 194). The iron ore is shipped by rail largely to Duluth and Superior on Lake Superior. There it is loaded on ore boats and carried down the lakes to Chicago, Gary (Fig. 195), Erie, Buffalo, and other steel-making cities which lie near coal supplies.

Zinc and lead resources of the Ozark region. The states in this group, especially Missouri, are the country's principal source of lead and zinc ore (Fig. 95). Lead is used

Courtesy Chamber of Commerce, Duluth

FIG. 194. **Mining ore in Mesabi Range, Minnesota.** This is a section of the Shenango Open Pit Iron Mine at Chisholm. Locate Chisholm (Fig. 176). This range yields more than 50 per cent of all iron ore mined in this country.

Here the iron ore lies under a thin covering of glacial soil and can be easily and cheaply mined. After the surface covering is removed, the iron ore is loosened with a charge of dynamite. It takes a steam shovel only an hour or two to fill a train of small ore cars. How do you think the ore is carried to the smelters in Illinois, Ohio, Pennsylvania, and Indiana? Name four cities to which it is shipped.

"International Newsreel"

FIG. 195. **A steel mill in Gary, Ind.** Flaming liquid metal is being poured from the huge bucket or ladle into what is known as an open hearth. Iron ore first goes through a simple refining process in blast furnaces. Through a continuous process of heating, the pig iron thus obtained from this process is refined still further. The final product is the steel ingot.

Do you know why the southern shores of Lake Michigan are especially favorable for the location of steel mills? How many different uses of steel can you name? Can you explain why the use of steel is essential in the development of our country?

in paint and solder, and in making electric-wire coverings and machinery. Zinc is used in making brass and bronze, but mainly in coating or, as it is called, galvanizing iron pipes and sheet iron in order to protect them from rust. These minerals are therefore very important in manufacturing.

The copper and salt deposits of Michigan. In Keweenaw Point in the northern peninsula of Michigan are valuable deposits of copper, which is an essential in the making of electric wires and many other necessary articles. But the expense of mining this copper, which in Michigan lies deep under ground, is so great that other states, where the ore can be mined more easily, now outrank it in the production of copper. Chief among these states are Montana, Utah, and Arizona (Fig. 212). Michigan is one of the leading salt-producing states, much of the

Allen

FIG. 196. **A limestone quarry near Bedford, Ind.** These large columns of famous gray Bedford limestone are ready for shipment to Harrisburg, Pa. They are to be used there in building the state capitol.

When first taken from the quarry the Bedford stone is soft enough to be easily sawed and dressed into shape. But the stone soon hardens under the action of the weather. Bedford limestone is much in demand for building because it is easily worked and because of its pleasing appearance and its strength. Make a list of the uses made of limestone in your community.

salt being pumped up dissolved in water from rock-salt layers.

Stone and clay resources. Excellent building stone is found throughout this group of states, the most valuable being the Bedford limestone of Indiana (Fig. 196). Much of the stone found here is suitable for the making of cement. In the production of cement the North Central states lead the country.

In Ohio are found extensive deposits of clay, used in making brick and drain tile and pottery. These industries are centered in and around the cities of Akron and East Liverpool.

The use of the forests. In addition to the various rich mineral deposits, valuable forests are found in this section, especially in the states of Wisconsin and Michigan. The hardwoods are used in the manufacture of furniture and in making agricultural machinery. The softer woods are used in making paper, as they are in New England and New York. Only a few years ago the region about Lake Superior and northern Lake Michigan was the great source of the lumber supply for the country. In this section many of the useful trees have been cut, and the far western and southern states are today the chief sources of our lumber.

73. EXTENSION OF MANUFACTURING THROUGH THE MIDDLE WEST

THE LESSON FORECAST

1. Special conditions that favor the growth of manufacturing.
2. Reasons for the great extent of the milling and meat-packing industries.
3. Why this is our greatest iron- and steel-making region.
4. Why the Middle West manufactures great quantities of clothing, rubber, and leather goods.
5. Why the industries of the Middle West are growing in number and variety.

Reasons for the increase of manufacturing centers. The importance of manufacturing in the North Central states is shown by the fact that Ohio ranks next to New York and Pennsylvania in value of manufactured products, while Chicago, Cleveland, and Detroit are exceeded in their output only by New York and Philadelphia. In almost every city of the Middle West are found factories turning out goods which are used either locally or in other sections of the country. Each city is of course a trade and distributing center for the country surrounding it. This industrial and trade activity is made possible by the numerous railroads that reach every good-sized town.

Naturally the largest cities are located where conditions are especially favorable for securing raw materials and power and for carrying on trade. The products manufactured in these cities vary according to the location of the city. Flour milling naturally is found near the wheat-producing regions, or at lake ports to which the grain can be readily shipped. Minneapolis (Figs. 41 and 198) is the chief flour-milling city, but Chicago, Kansas City, Milwaukee, Toledo, and many smaller cities in this region produce large quantities of flour and by-products.

The meat-packing industry. Chicago is the world's greatest meat-packing city. This is because it is near the great live-stock regions, has splendid rail connections with all parts of the country, and profits from the advantage of an early start in this industry. The Chicago stockyards, where animals are brought to be slaughtered and where the meat is packed, are the greatest in the world. St. Louis, Kansas City, and Omaha are also well known for their extensive slaughtering and meat-packing industries (Fig. 197).

The making of steel and machinery. Steel products are among the most valuable of the

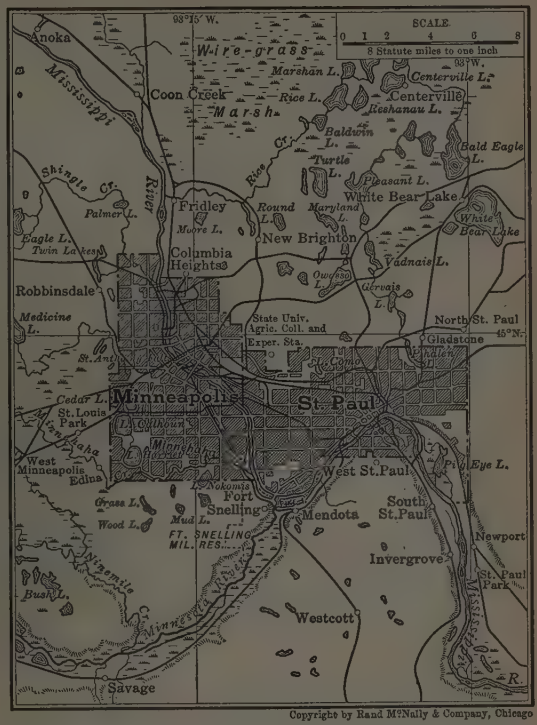


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FIG. 198. **The "Twin Cities," St. Paul and Minneapolis.** Note the winding course of the Mississippi. Locate the Falls of St. Anthony. Try to give two reasons for the large flour mills in these cities. Why are there so many small lakes in this region? (Read sec. 71.) Do you think more bridges over the Mississippi would be needed if Minneapolis and St. Paul were one city? Why?

Ewing Galloway

FIG. 197. **An air view of the stockyards at Kansas City, Kan.** In the foreground may be seen the various packing houses. Notice the yards along the river front in which the animals are kept until slaughtered.

Kansas City, Kan., is located on low, level bottomland at the junction of the Missouri and the Kansas rivers (Fig. 176). What city lies directly across the Missouri River? The stockyards shown here lie along the Kansas River.

Can you explain what advantages in location have helped Kansas City become a great live-stock market and packing center? Has Kansas City any advantages over Chicago for carrying on this industry?

Ewing Galloway

FIG. 199. **The harbor at Cleveland.** A view of the union freight terminal, railroad yards and coal docks, and part of the harbor. Most of the coal is handled here. The three big machines at the end of the docks are used to dump the contents of a freight car into the hold of a boat. Do you think there are advantages in having the iron-ore boats from the north carry back cargoes of coal? Can you tell why Cleveland has become a steel-manufacturing center?

manufactures turned out in our country. The cities in this group of states which lead in the steel industry are Chicago, Cleveland, Gary (Figs. 195 and 199), and Detroit, all located where iron ore can be easily secured. In recent years the making of automobiles has become the leading industry among all the many kinds of steel manufacturing. Detroit and the surrounding cities are known as the great center for the manufacture of automobiles. Here lumber, iron ore, and other necessary raw materials can be secured easily and the finished machines can be shipped out readily by boat or by rail. They may also be sent out over the excellent highways which connect Detroit with other cities.

The manufacture of agricultural machinery is a large industry in Ohio, Indiana, and Illinois, with Chicago as the chief center of the industry. Since much of the machinery is to be used in the near-by farming regions, it is an advantage to have it made in this section rather than in the manufacturing towns of the East.

Manufactures of clothing and of rubber and leather goods. While the industries just noted are the most important, this region produces other manufactures of great value. Clothing is made in quantities in Chicago for the same reasons that it is in New York City. Among other special products made in this region are automobile tires and rubber goods in Akron, Ohio, artistic pottery in Cincinnati, and shoes and other leather goods in St. Louis and Milwaukee.

Increase of manufacturing in the Middle West. In this group of states manufacturing is steadily increasing, both in quantity of products and in variety of articles produced (Fig. 200). As the population increases, markets increase also, and consequently new industries are constantly springing up. Not long ago this region was entirely dependent

Ewing Galloway

FIG. 200. **A large oil refinery at Marietta, Ohio.** Marietta lies in the center of a great oil and gas field with thousands of oil wells. A network of pipe lines stretching out over the region brings the crude oil from the wells to the refinery. Products such as gasoline, kerosene, and oils are shipped out in tank cars. Greases are shipped in drums and other containers. Why are pipe lines better than tank cars for bringing in the oil? Why are not products sent out the same way the oil is brought to the refineries?

List the petroleum products you know, and tell for what each one is used. Which one is most familiar?

upon the cities of the eastern states for many kinds of goods that are now being made here. It is no longer necessary to bring all the needed goods long distances, and the section prospers with new industries which meet its needs.

74. CITIES, RESORTS, AND PROBLEMS OF THE MIDDLE WEST

THE LESSON FORECAST

1. River cities with favorable locations.
2. Why Chicago has become the second largest city in the country.
3. The special advantages of Detroit's location.
4. Reasons for the location and growth of Cleveland, Kansas City, Omaha, and Gary.
5. The problem of future transportation.

The leading river cities of the Middle West. Many of the cities in this group owe their present size and importance to the fact that their sites were natural landing places in the early days of river travel. All the larger cities of West Virginia—Wheeling, Parkersburg, Charleston, and some others—are river cities. Columbus and Dayton, Ohio, now railway centers, are towns which once profited from their position on early canal routes.

St. Louis, lying near the junction of the Missouri and Mississippi, was in early days

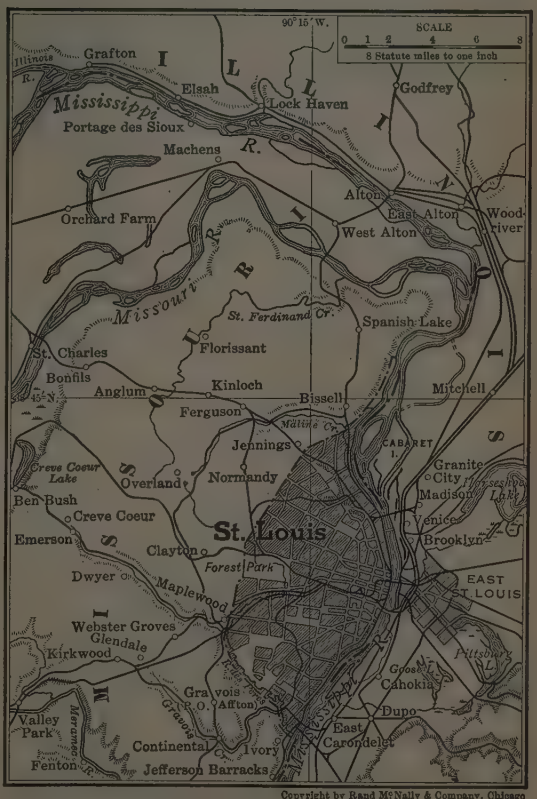

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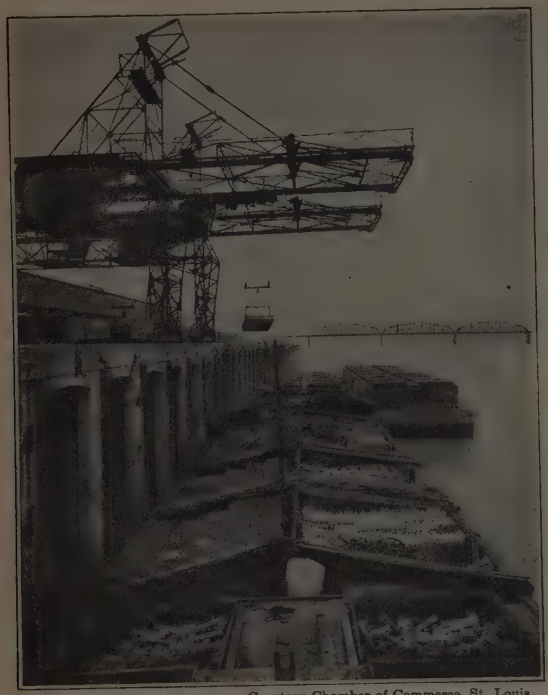
FIG. 201. **St. Louis and surrounding region.** Note the location of the city on the Mississippi near its junction with the Missouri. Do the railroads entering St. Louis from all directions indicate that it is an important place? This was the site of an early trading post. What advantages did it offer?



Courtesy Chamber of Commerce, St. Louis

FIG. 202. **The municipal pier, St. Louis.** Here is shown a small part of St. Louis' long water front. Can you explain why it was necessary to build such high piers? Note in the distance the great bridge across the Mississippi. Find out why barges are used to handle much of the shipping here.

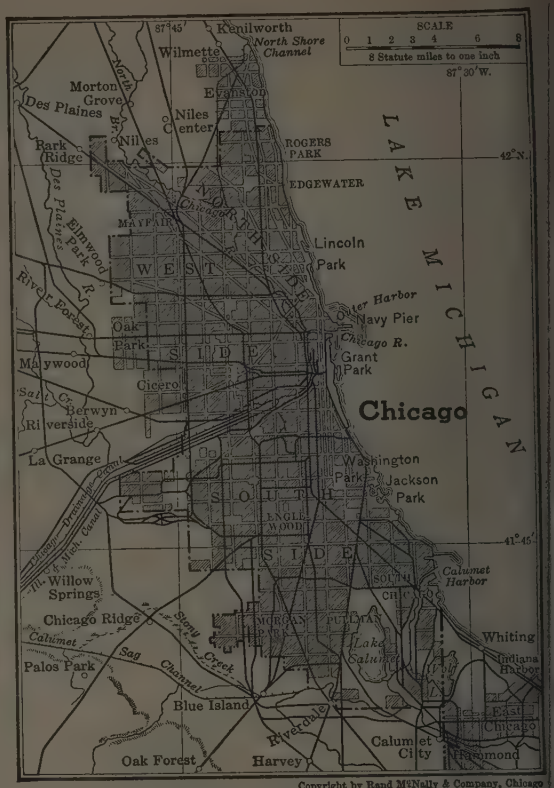


FIG. 203. **The city of Chicago.** Note Chicago's long water front on Lake Michigan. When plans for beautifying the city are completed, much of this water front will be occupied by parks. Note Calumet Harbor. Here are the ore docks for the South Chicago steel mills.

the point from which traders started on their long overland journeys to the West (Figs. 201 and 202). It early became a great fur market because trappers came down the rivers to dispose of their furs and to get their supplies. Today it is one of the largest fur markets in America and one of the largest in the world. Because of the advantages of its location it has a thriving trade by both water and land routes to the South as well as to the West.

Cincinnati, situated upon a bend of the Ohio River, was in early days the chief city of this region and the largest city in the Ohio Valley.

Kansas City (Fig. 197), at the junction of the Kansas and the Missouri, owes its growth partly to its good location, which is much like that of St. Louis. Louisville, Ky., a leading tobacco market, stands at the point on the Ohio where for a long time navigation was interrupted by falls. At this point goods had to be carried around the falls. When a canal (Fig. 47) was built around the falls in the river, this growing city became even more prosperous.

In the western part of this group of states are many cities through which pass the railroad routes from the Middle West to the Far West. Through Omaha, the largest of these cities, was built the first railroad to the West. At Sioux City, Iowa, and Fargo and Grand Forks in the Dakotas north-and-south railroad lines cross east-and-west railroad lines. These cities, therefore, are natural centers for trade with the surrounding country. They are often spoken of as "Gate Cities."

Courtesy Chamber of Commerce, Duluth

FIG. 204. **The harbor at Duluth, Minn.** This view was taken from the famous Boulevard Drive which is built along an ancient beach line now 475 feet above Lake Superior. Note and explain the advantages of the breakwater which stretches across the harbor. Do you know what raw products are shipped out from the harbor of Duluth? What is the disadvantage of the northern location of this harbor?

Leading cities and ports on the Great Lakes. Chicago (Fig. 203), the largest city in the Middle West, is the second city in size in the country. Lying at the upper or southern end of Lake Michigan, it became a great railroad center because all the railroads to the Northwest pass through it. Chicago is also an important distributing center because of the network of railways that radiate from it to all the cities of this region.

The cities of Milwaukee, Cleveland, and Toledo (Fig. 205) are prosperous ports and railroad centers situated on the Great Lakes. From Cleveland, the largest of these cities, branch railroads run by easy and level routes to St. Louis, Cincinnati, Chicago, and New York. Duluth (Fig. 204) and Superior are busy iron, coal, and grain ports lying at the extreme western end of Lake Superior.

Another interesting city with a fortunate location is Detroit. It lies on the Detroit River which connects Lake St. Clair with Lake Erie (Fig. 205). Through this strait must pass all the boats which ply between the upper and the lower lakes. In addition, Detroit is located at the most convenient point for railway connections between the Middle West and the rich region of Ontario in Canada.

Places of recreational and historic interest. In the North Central states there are many places of interest which attract visitors. As recreation centers the mountainous regions of West Virginia rival the popularity of the higher regions to the east in the South Atlantic states. But of all the mountains of this region the most attractive both for their beauty and for their delightful summer climate are the Black Hills lying at the western edge of South Dakota. Here are a number of large and popular summer resorts.

The many lakes and streams of Minnesota, Michigan (Fig. 206), and Wisconsin are

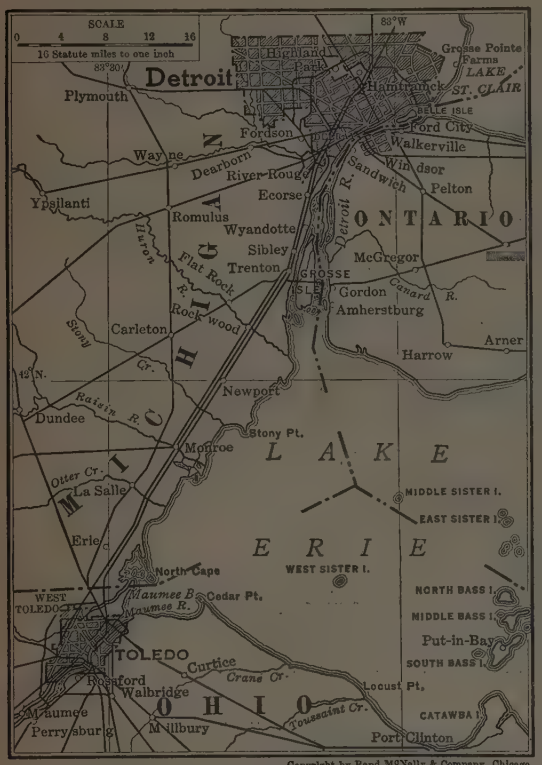


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FIG. 205. **The cities of Detroit, Mich., and Toledo, Ohio.** Can you explain the advantages of the location of these two cities? What great industry has been built up at Detroit? Name the country just across the river. To what nation does it belong? Notice the two cities of Hamtramck and Highland Park, which Detroit has surrounded in extending its limits. Study the boundaries of Detroit.

FIG. 206. **A pleasure and health resort in southern Michigan.** This is a scene on the St. Joseph River which flows into Lake Michigan near Benton Harbor (Fig. 176). What sports do you think this river offers the summer visitor? Try to find out whether the river is used for navigation. Have you ever visited this section of the country?

favorite resorts for hunting, fishing, and canoeing, and for summer homes. The great canals and locks at Sault Ste. Marie, Mich., which make it possible for ships to pass the rapids in St. Marys River, are of great interest, especially during the busy season of lake transportation (Fig. 207).

On and about the Great Lakes are many towns associated with the early history of our country when the French explorers were finding a way from the Great Lakes to the Mississippi. Of much interest are Mackinac Island and the old town of St. Ignace near by at the Strait of Mackinac, the point from which Père Marquette began his journeys to explore the country and to convert the Indians.

All the older towns have interesting histories, but many of them have grown so fast it is hard to believe that only half a century ago they were but villages or frontier forts.

Problems of the people of the Middle West. The great problem in which all the people of the Middle West are interested is that of transporting goods to market more cheaply. Today the greater part of the farm and factory products are carried to market by rail. This is, of course, expensive even when products are such that they can be packed tightly in a car. The largest market is in the East, which buys vast quantities of goods either for its own use or for export to foreign countries. Can the Mississippi River again be made a great inland trade route by means of which the products of the great Middle West may be shipped cheaply by water to the markets of the East, or, on the other hand, through the Panama Canal to the markets of the western coast of South America?

Can a Great Lakes–St. Lawrence Deep Waterway be opened up for the transportation of wheat and other bulky products? Is it possible to connect Lake Ontario with

FIG. 207. **Ships passing through the Sault Ste. Marie Canal.** This is a section of the "Soo" Canal built by the United States around the rapids in St. Marys River (Fig. 176). There is a canal around the rapids on the Canadian side of the river as well.

The traffic through these canals, although not so great in value, is three times greater in bulk than that passing through the Suez Canal. What are the chief products shipped through these canals? Are the canals in use the year round? Give the reasons for your answer.

Lake Erie by a deeper canal, and can the obstacles in the St. Lawrence be overcome so that ocean-going vessels may sail direct from Chicago and other Great Lakes ports to Europe?

In grain-growing regions, especially where a great many men are required only a part of the year, can machinery be used to do a still greater part of the work?

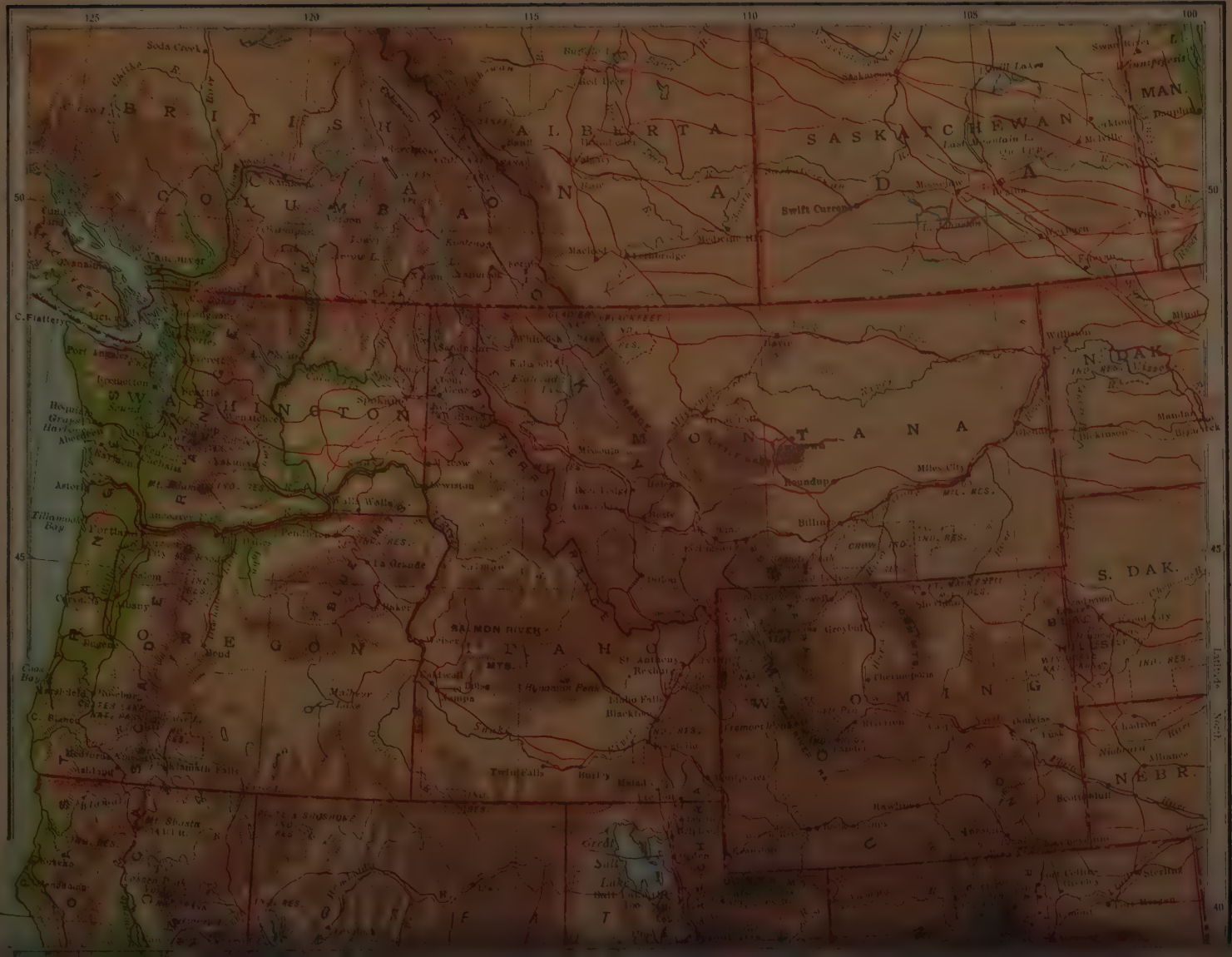
Will it ever be possible to ship milk and other perishable foods from this group of states to the eastern cities and thus open up a larger market for these special farm products?

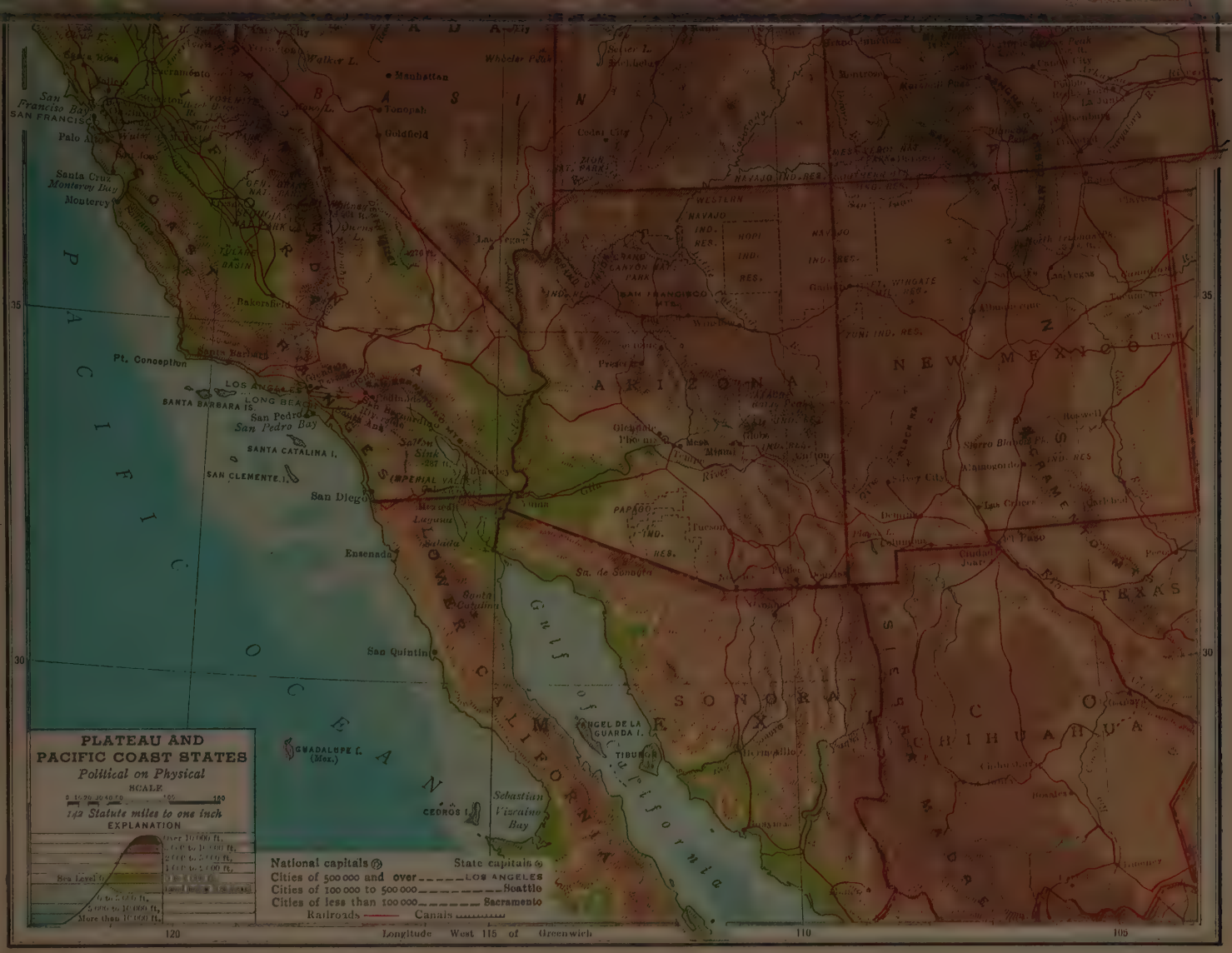
Can manufacturing be developed to such an extent that this region will be practically independent of other sections for goods? Can steel be made in greater quantities and nearer the rapidly growing cities of the Northwest? Will future inventions make it possible for freight trains to carry still larger loads and at the same time use less coal for power? Will it be possible to ship goods to the Pacific coast at rates cheap enough for them to be exported to Asia at a profit?

These are some of the questions people are discussing in their endeavor to find larger and better markets for all the products that this great region can furnish in increasing quantities.

SOME RELATED PROBLEMS

1. What would be the advantages and disadvantages of a Great Lakes–St. Lawrence Deep Waterway?
2. Question for debate: *Resolved*, That the construction by the federal government of a deep waterway from the Great Lakes to the Gulf of Mexico will benefit the entire country.
3. Why did the pioneers settle on the Prairies of this region rather than in the forested areas?
4. Why will cattle raising continue to be a leading industry on the Great Plains?
5. How have certain difficulties of transportation on the Great Lakes been overcome?
6. Why is most of the corn produced in the Corn Belt consumed at home while so much of the cotton of the Cotton Belt is shipped away?
7. How have railroads helped to solve the fuel problem on the Great Plains?
8. Make a list of ten different automobiles, giving the name of each company. Find out where each of the automobiles is manufactured.
9. Why is the slaughtering of hogs, cattle, and sheep carried on in large cities?
10. Study the advertisements in some recent magazine and make a list of the different articles that are manufactured in this region, noting the cities in which each one is made.


125
120
115
110
105
100
50
45
40
BRITISH COLUMBIA
ALBERTA
SASKATCHEWAN
MAN.
Soda Creek
Swift Current
Medicine Hat
Lethbridge
Macleod
C. Flattery
Port Angeles
Seattle
Tacoma
Olympia
WASHINGTON
Spokane
Walla Walla
Lewiston
Yakima
Astoria
Portland
Tillamook Bay
The Dalles
La Grande
Baker
Salem
Albany
Eugene
Coos Bay
Roseburg
C. Blanco
OREGON
Crater Lake Nat. Park
Klamath Falls
Mt. Shasta
Modoc Lava Beds
Goose Lake
Surprise Valley
Alturas
Lassen Peak
Pyramid Lake
Reno
Carson Sink
Humboldt R.
Great Salt Lake
Salt Lake City
Ogden
Provo
Green River
Uinta Mts.
Wasatch Mts.
Park Range
Colorado R.
Grand R.
Gunnison R.
Uncompahgre Plateau
Sierra La Sal Mts.
Abajo Mts.
Navajo Mts.
Henry Mts.
Aquarius Plateau
Kaibab Plateau
Grand Canyon
Virgin R.
Zion Canyon
Kanab
Escalante
Circle Cliffs
Waterpocket Fold
Capitol Reef
Fremont R.
Price R.
San Rafael R.
San Rafael Swell
Book Cliffs
Roan Plateau
Grand Mesa
Uncompahgre Peak
Sangre de Cristo Mts.
Wet Mts.
Arkansas R.
Pikes Peak
Cripple Creek
Colorado Springs
Pueblo
Canon City
Royal Gorge
Wet Mts. Valley
Huerfano R.
Spanish Peaks
Trinidad
Raton Mts.
Raton Pass
Las Animas
Arkansas Valley
Sangre de Cristo Pass
Sangre de Cristo Range
Rio Grande R.
Rio Grande Valley
Rio Grande Gorge
Taos
Taos Mts.
Santa Fe
Santa Fe Mts.
Pecos R.
Pecos Valley
Glorieta Pass
Las Vegas
Las Vegas Hot Springs
Tucumcari
Canadian R.
Canadian Valley
Clayton
Dry Cimarron R.
Cimarron Valley
Cimarron
Folsom
Dawson
Maxwell Land Grant
Vermejo R.
Vermejo Park
Raton
Capulin Mt.
Capulin
Springer
Cimarron R.
Cimarron Mts.
Philmont Ranch
Eagle Nest
Eagle Nest Lake
Red River
Questa
Red River Valley
Rio Hondo
Rio Hondo Valley
Rio Grande del Norte Nat. Mon.
Rio Grande del Norte
Rio Chama
Rio Chama Valley
Chama
Chama R.
Chama Valley
Tierra Amarilla
Tierra Amarilla Grant
Abiquiu
Abiquiu Reservoir
Abiquiu Creek
Ghost Ranch
Ghost Ranch Mesa
Chama Mesa
Chama Mesa Valley
Gallina
Gallina Creek
Gallina Valley
Gallina Mts.
Gallina Peak
Gallina Pass
Gallina Canyon
Gallina Creek Valley
Gallina Creek Canyon
Gallina Creek Mesa
Gallina Creek Mesa Valley
Gallina Creek Mesa Canyon
Gallina Creek Mesa Mts.
Gallina Creek Mesa Peak
Gallina Creek Mesa Pass
Gallina Creek Mesa Canyon
Gallina Creek Mesa Valley


PLATEAU AND
PACIFIC COAST STATES
Political or Physical
SCALE
142 Statute miles to one inch
EXPLANATION
Sea Level
National capitals
State capitals
Cities of 500 000 and over ——— LOS ANGELES
Cities of 100 000 to 500 000 ——— Seattle
Cities of less than 100 000 ——— Sacramento
Railroads
Canals
Longitude West 115 of Greenwich
120
110
105
35
30
PACIFIC OCEAN
Gulf of California
Lower California
Sea of Cortez
Sa. de Sonora
San Francisco Bay
SAN FRANCISCO
Monterey
Santa Cruz
Pt. Conception
SANTA BARBARA IS.
LOS ANGELES
LONG BEACH
San Pedro
San Pedro Bay
SANTA CATALINA I.
SAN CLEMENTE I.
San Diego
Ensenada
San Quintin
GUADALUPE I. (Mex.)
CEDROS I.
Sebastian Vizcaino Bay
ANGEL DE LA GUARDA I.
TIBURON
Hermosillo
Guaymas
Ciudad Juarez
El Paso
Tucson
Phoenix
Yuma
Mesa
Glendale
Prescott
Flagstaff
Albuquerque
Las Cruces
Roswell
Carlsbad
Clovis
Amarillo
Las Vegas
Reno
Sacramento
Bakersfield
Fresno
Salton Sink
Salton Sea
IMPERIAL VALLEY
Death Valley
Mojave Desert
Colorado Desert
Colorado River
Rio Grande
Pecos R.
Gila R.
Mohave
Manhattan
Tonopah
Goldfield
Walker L.
Wheeler Peak
Cedar City
Provo
Ogden
Salt Lake City
Pocatello
Boise
Montrose
Grand Junction
Pueblo
Colorado Springs
Denver
Cheyenne
Casper
Rock Springs
Green River
Evanston
Logan
Great Salt Lake
Utah L.
Sevier L.
Pyramid L.
Mono L.
Owens L.
Searles L.
Mt. Whitney
Death Valley
Yosemite Valley
Lassen Peak
Crater L.
Mt. Shasta
Mt. Hood
Mt. Rainier
Mt. Olympus
Mt. Baker
Mt. Adams
Mt. Jefferson
Mt. Hoffman
Mt. Tallac
Mt. Whitney
Mt. Shasta

THE PLATEAU STATES

75. WHAT THE MAPS, TABLES, AND GRAPHS SHOW

Problems:

1. Where are the best places to cross the states of this group? (*a*) What routes were followed by the early explorers? (See maps in your history.) (*b*) Where are the main railways? (Fig. 208.) (*c*) Do you know which states have the most automobile roads? (*d*) Which automobile road is the best to follow in winter? (*e*) Why are the middle and northern roads impassable in winter? (*f*) Why is the southern route not popular in summer?
2. What do the maps, pictures, and graphs show as to the possibilities of agriculture in this region? (*a*) From the reference tables find out the population per square mile in Arizona, Nevada, and Wyoming. (*b*) How do these figures compare with the figures for the population per square mile in Iowa? (*c*) What does this suggest as to the importance of farming in this region? of grazing? of mining? (*d*) Compare the rainfall in this region with that in the North Central states; with that of New England (Figs. 105, 175, and 209). What occupations are found in regions of light rainfall? (*e*) What does the amount of rainfall in the mountain regions indicate as to the possibilities of irrigation? (Figs. 98 and 209.) (*f*) What are the food products of a grazing region?
3. Why are not the rivers in this group of states used for navigation?
4. What parts of this region would you like to visit, and why?
5. How long would it take one to travel from Cheyenne, Wyo., to Reno, Nev., over the railroad? (Consult a railway time-table.) How long would it take by automobile over the Lincoln Highway at the rate of 200 miles per day? (See any automobile handbook.)

Questions:

1. Which of these states border on Mexico? which on Canada?
2. Which of these states is not touched by the ranges of the Rocky Mountains?
3. What states border this group on the west?
4. Into what bodies of water does the drainage of this region flow?

Minimum essentials in location:

Be able to name and locate the following on an unlettered map: the states and their chief cities; five rivers; two large irrigation projects; three national parks; the chief physical regions; bordering states and countries; these cities: Colorado Springs, Pueblo, Helena, Ogden, Pocatello, Great Falls, Tucson, Carson City, Santa Fe, Bisbee.

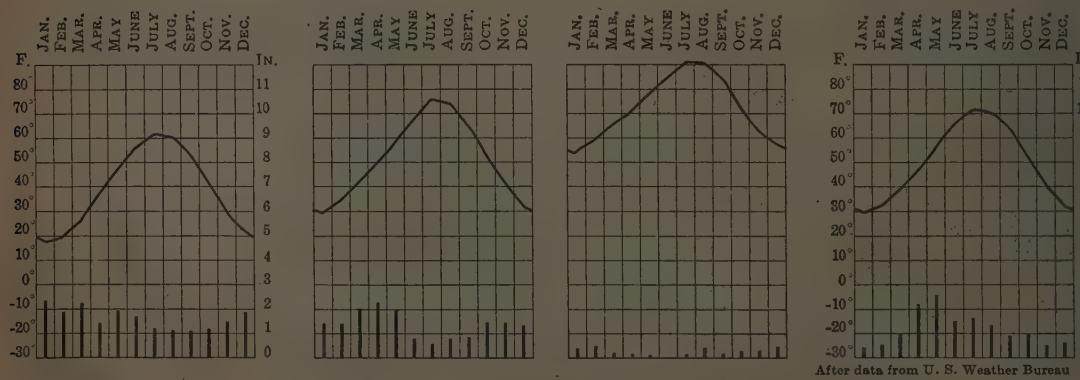

JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT. OCT. NOV. DEC.
F.
IN.
80° 70° 60° 50° 40° 30° 20° 10° 0° -10° -20° -30°
11 10 9 8 7 6 5 4 3 2 1 0
Yellowstone Park, Wyo.
Alt. 7,741 ft. Temp. 39.4°
Rainfall 18.80 in.
Salt Lake City, Utah
Alt. 4,366 ft. Temp. 51.6°
Rainfall 16.03 in.
Yuma, Ariz.
Alt. 141 ft. Temp. 72.6°
Rainfall 2.97 in.
Denver, Colo.
Alt. 5,291 ft. Temp. 50.0°
Rainfall 14.02 in.
After data from U. S. Weather Bureau

FIG. 209. **Average annual temperature and rainfall for four cities of the Plateau states**

Courtesy Chamber of Commerce, Colorado Springs

FIG. 210. **Historic Ute Pass in the Colorado Rockies.** This pass takes its name from the Utes, a tribe of Indians belonging to the Shoshone family. (Consult your history for this.) Long before the white man came, the Utes that roamed over the region used this pass on their annual hunting expedition into the mountains.

In the early days of mining, millions of dollars' worth of silver and gold ore was carried over the trail the Indians had made through the pass. Now this narrow trail has given place to the fine road to be seen in the picture. This roadway is part of the famous Pikes Peak Ocean-to-Ocean Highway.

Why does the highway follow the river valley? Do you think it must be difficult and expensive to build roads through a region like this?

76. THE EXPLORATION AND EARLY DEVELOPMENT OF THE REGION

THE LESSON FORECAST

1. Why the discovery of gold in California brought people into this region.
2. Why early travelers suffered great hardships.
3. The Platte River, the Oregon Trail, and the Union Pacific System.
4. The Santa Fe Trail and Santa Fe Railway.
5. Other routes and railroads.

The discoveries made by the early explorers. The Plateau states lie almost entirely in a great highland of mountains and plateaus which extend almost without a break from Canada to Mexico (Figs. 86 and 210). This vast region, which occupies nearly a third of our country, was made known to us by explorers only about a hundred and twenty years ago. These explorers went up the Missouri, crossed over the mountains, and then followed the Columbia to the Pacific. While seeking a route to the Pacific Ocean, they discovered a beautiful country rich in fur-bearing animals, minerals, and forests.

Many of the prospectors and settlers who went to California during the gold rush journeyed across the mountains and plains in wagons and on horseback. Many of these early travelers knew nothing of the country across which they were to make a long and difficult journey. They came from the eastern states where water was always to be had and knew nothing about living in a dry country where it was scarce. Many of them died of thirst. Others were killed by the Indians who occupied the plains and mountain valleys and who looked upon the white people as intruders.

The easiest route was found to be up the Platte River, over a low pass through the mountains along practically the same route followed by the Union Pacific System today. This early route, called the Oregon Trail, branched both to Oregon and to California.

The overland trails and the railway routes. The Santa Fe Trail, an early route much used for trade with Mexico and the southwestern states, began at Kansas City, and

Courtesy U. S. Forest Service

FIG. 211. **Silverton in southwestern Colorado.** Silverton is a mining center in the central part of the San Juan mining district, a region rich in gold and silver deposits. The mountains in the background are the Sultan Ranges, part of the San Juan Mountains. Do you know why metal-bearing ores are more easily mined in mountains than in plains?

Many mining towns mark the end of railroads, but in Silverton several spurs extend from the main line back into the mountains. Find out why Silverton, in spite of this advantage for trade and its favorable location in a river valley, has not become a large city.

crossed the plains and the southern Rockies through what is today New Mexico and Arizona. The Santa Fe Railway now follows quite closely this old route, and now and then from the train one can see ruts or sunken tracks made by the wheels of wagons that so long ago wound their way over this trail.

Farther south there is still another railroad running from New Orleans to El Paso and thence west to California. Other railroads have been built across this vast region until now there are three lines through the mountains in the northern states, three in the central states, and two in the southern states of the Plateau group.

All these railroad lines are not only important freight routes but yearly they carry thousands of travelers, many of whom are attracted by the delightful climate or the beautiful scenery both of this section and of the Pacific Coast states.

77. MINERAL AND FOREST RESOURCES OF THIS REGION

THE LESSON FORECAST

1. How the discovery of minerals in this region affected the growth of the population.
2. Rapid growth and decline of mining towns.
3. What is meant by smelting.
4. The coal resources of the region.
5. The forested areas.

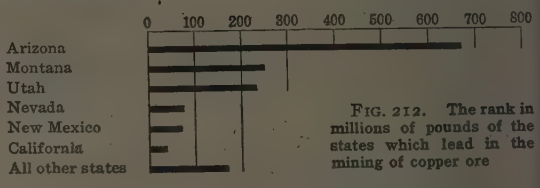


FIG. 212. **The rank in millions of pounds of the states which lead in the mining of copper ore**

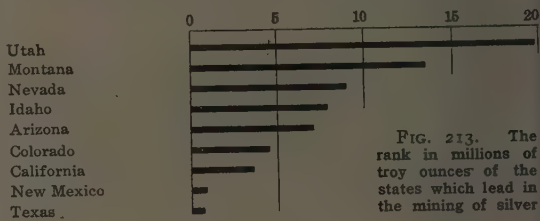


FIG. 213. **The rank in millions of troy ounces of the states which lead in the mining of silver**

The day of the prospector and miner. The first permanent settlers in the Plateau states were either miners or ranchers. The rocks of the mountains here are rich in minerals, especially copper, silver, gold, and lead (Figs. 95 and 211). Arizona, Montana, and Utah are the leading copper states, Colorado ranks second in the production of gold, and Montana and Utah lead in that of silver (Figs. 212 and 213). In the early days of the gold rush the mineral riches were

Courtesy U. S. Forest Service

FIG. 214. **Camp Bird Mill in the Rocky Mountains.** This large stamp mill is located in a noted mining center of the San Juan region thirty-seven miles southwest of Durango (see map, Fig. 208). Back of the mill, higher up on a steep mountain of the rugged San Juan ranges, is located the Camp Bird Mine. Near by are the laboratories and the homes of the workers. Locate the San Juan Mountains in Colorado on a map. In what direction do they extend?

Gold-quartz ores from the mine are crushed in this stamp mill by a process known as concentration. (Look for the meaning of concentration in your dictionary.) Find out and explain what placer mining is. Can you tell how it differs from the method of mining described here? What is Colorado's rank in the production of gold?

discovered by prospectors traveling alone in their search for wealth, perhaps with only a mule, a few cooking utensils, and a pick and shovel. Everyone expected to become rich quickly, but many prospectors spent their lives in a weary search without any success. A few found great wealth.

Whenever new deposits were discovered, people flocked to the region in great numbers, and cities grew up almost over night. Many of these cities were later abandoned because the areas did not prove to be rich. But some of the mining towns grew rapidly and have continued to develop, and are known by name the world over.

How metals are secured from minerals. After minerals like copper and silver are brought to the surface of the earth they must be smelted; that is, melted and freed from other materials that are worthless. In a mining region or near it, therefore, there are usually many cities where smelting is done (Figs. 214 and 215). There is, for instance, much smelting done at Denver and at Pueblo

Courtesy Chamber of Commerce, Salt Lake City

FIG. 215. **An ore train in Utah on its way to a smeltery.** This train of fifty-two cars is hauling 4,000 tons of copper ore from a great mining district, not far from Salt Lake City, to the smelters. Do you think that mining copper in this region might be expensive? What is the rank of Utah in copper production?

Chas. J. Beldon, Pitchfork, Wyo.

FIG. 216. **Cattle on the grazing range in western Wyoming.** In summer the range furnishes plenty of pasture for the cattle. Often much good pasturage is found in the mountain highlands and valleys. In winter, when snow covers the ground, the cattle are driven down to the ranch, where they are given dry feed such as hay and alfalfa. See if you can find out how the herds were cared for in the early days of the cattle industry.

Can you explain how the increase in the number of homesteads has affected the size of the herds? Where may the cattle shown here be taken to be fattened for market?

because they can be reached easily from the mining towns of the Colorado mountains. Anaconda, Mont., and Bingham, Utah (Fig. 215), are other cities of this region notable for their smelteries.

Besides precious metals, most of the states are rich in soft coal, which is mined for local use in factories and smelters or for railroads, while some is shipped to states farther east.

The great forests of this region. While the mineral wealth of these states is of great importance, the forests provide an even greater source of wealth. All the higher mountains are forest covered (Figs. 214 and 215), and from these forests are obtained yearly large quantities of lumber. Many of the forest areas, however, are owned by the national government, and in them the cutting of the trees is done with great care. The national forests, like the national parks, are being preserved by the government so that for long ages to come the people may continue to enjoy them.

78. THE FARMING INDUSTRY

THE LESSON FORECAST

1. Why large areas are needed for grazing.
2. Why sheep thrive better in this region than cattle.
3. How water is secured for irrigation.
4. The leading crops grown in the various sections where irrigation is practiced.
5. How dry farming is carried on.

Changes in the grazing industry. In the early days of grazing upon the Great Plains large herds of cattle wandered far and wide seeking food. This is a short-grass region, and it takes many acres of land to furnish pasture for one animal through the year. Today when riding through the grazing region we usually see only small herds of cattle instead of the great herds that once ranged there. While we still find range grazing, as it is called (Fig. 216), in most sections the cattle in certain seasons are fed hay just as are the cattle in the more moist states of the East. Most of the Plateau states raise many beef cattle (Fig. 217).

More sheep than cattle are raised in these states today, for sheep find a living where cattle would starve. Sheep can be driven from one feeding ground to another and can be pastured both on plains and in mountain valleys. Only Texas and California exceed Montana and Wyoming in sheep raising, and Texas alone exceeds Montana in wool products (Figs. 64, 160, 161, and 216). Many sheep are shipped to the North Central states to be fattened for

Courtesy Chamber of Commerce, Colorado Springs

FIG. 217. **Beef cattle being fattened for market.** The section in Colorado known as the Pikes Peak region is rapidly becoming famous for its fine cattle. Locate this region on the map (Fig. 208). Here in the irrigated sections just east of the Rocky Mountains are grown the grains used in fattening the cattle.

The cattle shown here are pure-bred range cattle which have been put into an inclosure to be fattened for market. Can you name this breed of white-faced cattle?

What city in Colorado has become an important meat-packing center? Explain in what ways it is an advantage to have the meat-packing center near the grazing region. Are there ways in which it is a disadvantage? Explain them.

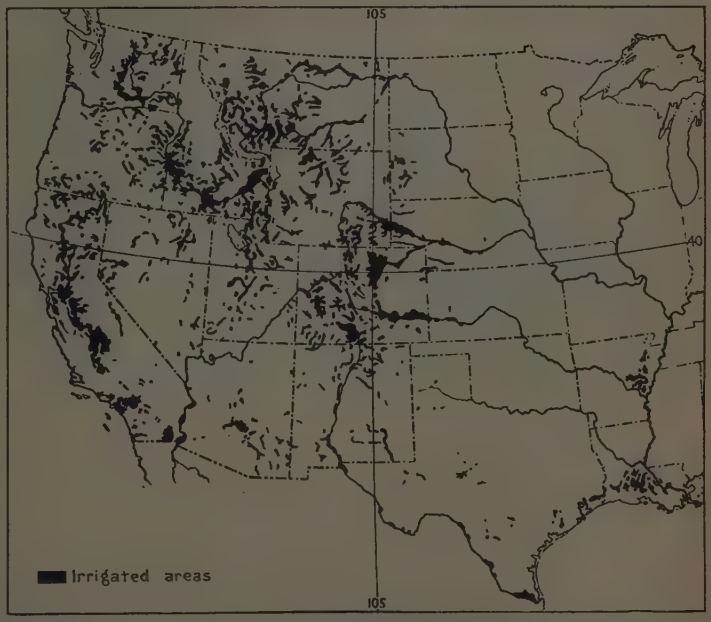


FIG. 218. **Irrigation projects in the United States.** Note the section of the country in which the irrigation projects are located. Why must irrigation be practiced in this section? (Figs. 98, 102, 103.)

The United States government, acting through the Bureau of Reclamation, has either constructed or has under construction thirty-three irrigation projects in sixteen western states. In 1925 these projects supplied water to over 1,802,000 acres of land, and some water to 950,000 acres of land adjacent to the projects.

Among the structures included in an irrigation project are a dam, a power plant, ditches, bridges, tunnels, flumes, railroads, and telephone and transmission lines. Find out where some of the largest dams are. Why is it impossible to irrigate all the fertile land in the West?

market (Fig. 30), while the slaughtering is carried on in the great meat-packing centers.

Raising crops under irrigation. Since the climate in the Plateau states is everywhere dry except in the higher mountains, little farming is done here except where the needed water can be brought to the land by means of irrigation (Fig. 218).

The water for irrigation is usually taken from mountain streams. This water is brought down the mountains in ditches or through tunnels and is then carried onto

Courtesy U. S. Reclamation Service

FIG. 219. **The Lahontan Dam near Fallon, Nev.** This great dam and reservoir form part of the Newlands Irrigation Project and are located in what is known as the Carson Sink Valley in western Nevada. The dam is built across Carson River. About 70,000 acres of land are supplied with water by this irrigation project.

Note the automobile standing on the roadway above the dam. Does it help you determine the size of the dam? Try to find out why such great dams as this are built in the form of an arc.

the surface of the ground. From the large ditches the water runs into smaller ones that are dug at regular intervals through the land to be cultivated. Water can thus be supplied to the land as it is needed. But as yet only a small part of this region is under irrigation.

Many dams have been built by the national government in different parts of this region (Fig. 219), and the water thus held back supplies about one-third of the land under irrigation. Since the climate is very dry, much more water must be stored and held in reserve than is actually needed, for it evaporates rapidly from the reservoirs and from the ground and ditches.

Before it is irrigated, the land must be made nearly level so that when the water is turned on it will flow through the ditches very slowly. When water is once brought to this dry land, the crops grow rapidly in the bright sunlight and high temperature of the summer days.

Much of the land that is now under irrigation had been dry for a long time, and the surface of the soil had gradually become filled with salts. These salts were at first dissolved in the ground water. As the water dried away, however, the salt was left on or near the surface, just as it is left on the surface of a dish in which salty water has dried. This salt, or alkali as it is called, must be washed out of the land before crops will grow. In many areas the soil must be freshened for two or three years before crops can be raised.

The crops grown under irrigation vary in different states. The most profitable are alfalfa for cattle and other stock food, and certain fruits such as apples, pears, plums, and peaches. In certain sections of Colorado and in some of the other states cantaloupes, cucumbers, and sugar beets are grown.

In the warmer sections of Arizona, where the summers are long and very hot, cotton is grown. This is a long-fibered cotton quite different from that grown in the Cotton Belt. It is really an Egyptian cotton like that grown in the Nile Valley. Another irrigated crop in Arizona is that of dates, which are being raised in increasing quantities. The date, a native of western Asia and northern Africa, thrives in Arizona, which is similar in climate, soil, and water supply to the oases of the Asiatic and African deserts.

In the states of New Mexico, Arizona, and Nevada the contrasts between the areas that are irrigated and those that are not are very striking (Figs. 220 and 221). Sometimes, just by crossing a road one may go from an almost barren desert into rich fields. In the

Courtesy U. S. Reclamation Service

FIG. 220. **A scene in a semiarid region in Nevada.** This view near Carson City was taken before irrigation was introduced. It shows the scanty vegetation of the Lahontan Desert region. In this desert region rain almost never falls and in winter snow comes rarely and does not lie on the ground more than a week or two. The soil is rich and under irrigation yields fine crops (Fig. 221).

This region is surrounded on all sides by mountains which shut off the rainfall. The general elevation of the Lahontan Desert area is about 4,000 feet. What effect have these climatic and surface features on the locality?

Courtesy U. S. Reclamation Service

FIG. 221. **A wheat ranch in an irrigated desert region.** This ranch is also in the Lahontan Desert region. The wheat is ready to be harvested. Compare the height of the stalks with that of the men in the field. Have you ever seen a wheat field ready to harvest? What does the growth of the wheat in this field tell about the soil conditions in this region?

Since the land yields such fine crops under irrigation, can you explain why a larger part of the state is not irrigated? Try to find out also why crops are not grown by dry-farming methods in this part of Nevada.

grayish-brown stretches of desert there are no green plants, no insect life, no fragrance of growing things. In the irrigated oases is found the deep-green foliage of a fragrant vegetation, with abundant insect life.

The irrigated sections, the garden spots in a dry country, furnish the traveler not only food but water, the greatest need in such a region. In traveling through dry countries one's route must be planned so as to pass near wells, springs, or holes in which water has accumulated during an occasional storm.

How and why dry farming is carried on. The other type of agriculture common to certain sections of this dry region is dry farming. In these sections a crop is sown only every other year, usually after there has been a little rain in the autumn. The crop starts up again in the spring when there is a little more rain. As the season goes on, the plants are nourished by the water held in the soil from the year before. This ground water has been conserved by having no crops grown and by keeping the ground constantly

stirred, or harrowed, to prevent the water from evaporating.

In this way, by planting a crop one year and keeping the land tilled the next, the rainfall of two years is used on each crop. By the use of these dry-farming methods excellent crops of grain can be grown in apparently dry regions.

In irrigated regions a small area supplied with plenty of water at the right time can be made to yield rich returns (Fig. 221). But in dry-farming sections a large area must be planted in order to make farming profitable, because the land does not yield abundantly.

79. SCENIC AND HISTORIC FEATURES OF THE REGION

THE LESSON FORECAST

1. How vegetation responds to moisture.
2. Why the climate of the Plateau states attracts certain people.
3. How the natural beauty of the mountains is being preserved.
4. Why Yellowstone Park and Glacier National Park are of special interest
5. The Grand Canyon and the surrounding country.

The attractions of the climate. As we have already learned, the climate of the Plateau states is everywhere dry except in mountains so high that they receive some rainfall, especially in the winter months. It is the winter rainfall in the mountains that makes farming by irrigation possible in the lower lands.

In many sections of this region, especially in the south, there may be weeks or even months between rains. Vegetation flourishes after a rain but quickly shrivels up as soon as the water evaporates.

Such a dry climate is enjoyed by many people and is especially good for those suffering from certain diseases common in the moister sections of our country. Health resorts, therefore, have sprung up in these states, while other sections are much visited in summer because of their beautiful scenery.

In such a dry climate the days are clear and the sun is intensely hot. The nights, however, are always cool. This is a particularly pleasant climate for those who like to camp and sleep outdoors. In the southern states of this group many of the houses are built with flat roofs on which people sleep at night. In such a region a steep-sloped roof is not needed as it is where there are heavy falls of rain or snow.

In a dry climate objects are seen clearly at a long distance, and the details of a landscape stand out strikingly. The slopes are not covered with green vegetation, but instead the bright colors of the soil and surface rocks attract the attention. At night in this dry country the stars are unusually bright and clear. It is never very dark except at those rare times when clouds cover the sky.

The national parks. This group of states, as we have said before, is famous for its scenery and for places of historic interest. The regions of most striking beauty and interest in the high mountains and plateaus have been set aside by the national government as national parks. The forests and the wild animals and birds, which make their homes there in great numbers, are carefully preserved and protected. Visitors are much interested in the elk, buffaloes, bear, deer, and other wild animals which add much to the apparent wildness of the regions.

The best known and perhaps the most visited national parks are the Yellowstone Park in Wyoming, Glacier Park in Montana (Fig. 222), the Grand Canyon in Arizona, and Zion National Park in Utah.

Yellowstone Park, a third as large as the state of Vermont, is famous for its hot springs and geysers, for its high mountains, and for the beauty of the Yellowstone River. In this region the rocks lying deep beneath the surface are still very hot, and from them are poured forth great quantities of hot water and steam. In some places the hot water

Courtesy Great Northern Railway

FIG. 222. **Stark Peak in Glacier National Park, Montana.** Glacier National Park, one of the most interesting of the great national parks, abounds in towering peaks, great crags, steep cliffs, glaciers, lakes, and swift streams. The stream seen dashing over the rocks in the foreground of this picture is Swift Current Creek. The bridges spanning this stream have been built for the foot trail and for an automobile road, which can be used, however, only in dry weather. An automobile highway crossing the park from east to west is being built.

In what part of Montana is Glacier National Park located? (Fig. 208.) In what range of mountains does it lie? Can you explain why there should be so many glaciers in this region? Plan an imaginary trip to Glacier Park. Describe the equipment you would take and the route you would follow.

flows constantly like a spring. In others the water is blown into the air from time to time with great force, sometimes reaching a height of nearly two hundred feet. Such spouting springs are known as geysers.

The geysers are among the most interesting features of Yellowstone Park. One geyser, well named Old Faithful, erupts regularly every hour. The largest geyser, that is, the one throwing out the greatest quantity of water to the greatest height, erupts only once in several weeks.

High among the steep mountains of Glacier National Park (Fig. 222) are swift streams and many beautiful lakes. This park takes its name from its many small glaciers, about eighty in number. Glaciers, as we have learned, are masses of ice lying in high mountain valleys, and are formed from the snows of many winters. These ice masses move slowly down the valley until they reach a place where the temperature is warm enough to melt the edge as fast as the ice moves. We know the northern part of our country was once covered by a glacier or ice cap thousands of feet deep. The small glaciers in Glacier Park are not only interesting in themselves but they show us how this great glacier of long ago did its work, how it scraped the land and dropped rock deposits at its melting front.

The Grand Canyon in Arizona, the most noted river valley in the world, is famous for its beauty. It has been made by the Colorado River which flows in some places over a mile below the top of the Plateau into which the valley has been cut. The Colorado rises in the Rocky Mountains. From the point in Utah where the Grand River empties into the Colorado down to its mouth in the Gulf of California, the Colorado has only one good-sized tributary, the Gila River in southern Arizona. This indicates how dry the country must be through which this stream flows.

For long ages the Colorado has been slowly cutting its way down into the rocks of the Plateau. All this time the weather and other forces have gradually worn away the rocks on the valley sides of the canyon.

Looking down from the rim of the canyon one can see great peaks, none of which reaches to the top of the canyon, lying between the valleys of the small side streams that flow into the river. Some of these peaks are higher above the bed of the stream than is any Appalachian peak above the ocean because the Colorado has cut so deep a valley in this high Plateau.

The rocks forming the canyon walls are of many colors, gray, yellow, red, and brown. They change constantly in color beneath the sunshine and shifting clouds, and one can never weary of watching them. This great canyon is far too magnificent in size and in coloring to be easily described. It is one of the world's most wonderful natural features and is visited each year by thousands of people.

The ancient ruins found in this region. In many sections are found ruins of cliff dwellings and pueblos occupied many, many years ago. The people who inhabited them left no story of their lives except that which can be learned from studying the ruins and the tools, clothing, fragments of pottery, and other relics found there. The cliff dwellers lived in caves often far up on the side of a valley under a high cliff (Frontispiece) which protected them from the attacks of enemies. In some of these caves are the ruins of great stone buildings large enough to have housed many hundreds of people.

Others of these ancient people lived in pueblos, just as do some of the Indians living in this region today. A pueblo is a large building constructed much like the stands around a big athletic field. The outer wall is high and back of it are tiers of rooms one above another. The largest known pueblo had homes for several hundred people. Pueblos were built in the flat, wide valleys, and often gardens and fields were planted near by. There are many ruins of such pueblo villages in New Mexico and Arizona. Some of them were so well built that the walls, often made of small, thin rocks laid in clay, are as straight and perfect as if just built. The pueblos and cliff dwellings are of great interest to the visitors who come here in greater numbers each year.

80. IMPORTANT CITIES AND PROBLEMS OF THIS REGION

THE LESSON FORECAST

1. The gateway cities to the central Rockies.
2. Why there are a number of large cities in the vicinity of Great Salt Lake.
3. Future problems of irrigation and dry farming.
4. Problems of marketing and transporting the products of this region.

Great Plains and Rocky Mountain cities. The larger cities in this group of states are either trade centers located where business can be carried on with wide surrounding territory, or else they are mining cities. Denver, Colo., the largest city in this region, lies on the western edge of the Great Plains at the foot of the Rocky Mountains, with many railroads radiating from it to other important mining towns (Fig. 208). It is also connected with the East and with the Pacific coast by several railroads. Moreover, it has the advantage of lying near live-stock and farming regions, as well as mining centers. It is therefore the trade center for the many smaller cities in both the mountains and the plains, and ranks high in meat packing and smelting.

South of Denver are four well-known cities, each with a location similar to that of Denver on the western edge of the Great Plains. Like Denver they are also railroad centers. Colorado Springs, noted as a health

resort and as a point of departure for the near-by scenic regions, lies near Pikes Peak, the most famous mountain of the Rockies (Fig. 223). Pueblo on the Arkansas River is situated on the railroad following the valley of this river. It is noted for the extent of its smelting and manufacturing. Still farther south lies Trinidad, a railroad center and shipping point for the coal mines. In New Mexico, in the Rio Grande Valley (Fig. 208), is Albuquerque and near by is Santa Fe. These two cities, which are both health resorts, are situated near a number of most interesting Indian villages. Santa Fe, the second oldest city in the United States, was first settled by the Spanish, who explored this region long before the eastern states were settled.

North of Denver, in Wyoming, lying near the lowest pass over the Rockies, is Cheyenne. Located upon the oldest of the railroads to the West, it is, like Denver, a trade center on which a large area depends.

Throughout the mountain region are many places that are either mining towns or health and pleasure resorts. The best known mining towns are Butte, Mont., and Bingham, Utah, both copper-mining cities, and Leadville, Colo., once noted for its silver mines.

Cities of the Plateau and Basin Region. Within the Plateau and Basin Region are a large number of towns, some of which are trade centers for near-by agricultural regions, while others in addition are manufacturing centers.

The largest of these cities is Salt Lake City (Fig. 224) situated at the foot of the Wasatch Mountains only a few miles from Great Salt Lake. Between the mountains and the lake stretches a rich region irrigated by waters from the mountains. Here in addition to Salt Lake City are Ogden, Logan, and Provo, all railroad and trade centers.

The largest city of Nevada is Reno, located in a dry region but near a gateway

Courtesy Chamber of Commerce, Colorado Springs

FIG. 223. **Pikes Peak as seen from Colorado Springs.** This city stands on a plain 6,000 feet above sea level. With its fine climate, beautiful scenery, and excellent motor roads, it is a resort which attracts many tourists. Measure the distance from Colorado Springs to Pikes Peak on your map. Can you explain why the mountain looks so near?

to the Pacific through which pass western railroads. In Arizona are several large cities which are dependent upon near-by irrigated farming or mining regions. Phoenix, the largest city, and Tucson both lie so far south that they have long summers. Hence the irrigated regions about them produce special crops, such as cotton and dates. Douglas, Bisbee, and Globe are mining centers.

North of Great Salt Lake lie Pocatello, Idaho, a railway center on an important railroad to the East, and Boise, a manufacturing center. Each of these cities has grown to prominence because of its favorable location. Along the railroads are a number of smaller towns, but because their locations are not specially favorable they have grown slowly.

Problems of the people of this region. The great distance which surplus products of this region must travel to reach markets is a severe handicap to agriculture and industry. What materials must be produced in order to compete with other regions in the markets of the world? There are in this region great areas of rich soil but only a

Courtesy Chamber of Commerce, Salt Lake City

FIG. 224. **Salt Lake City, Utah, from the air.** The width and regularity of the streets and the size of the city blocks show how carefully Salt Lake City has been planned and laid out. The city is notable for its many fine buildings. Although in a dry region where all vegetation depends upon irrigation, Salt Lake City has many fine gardens and shade trees. Can you tell where the water for irrigation is obtained? When was irrigation first practiced here?

limited supply of water for irrigation. How much more land will it be possible to develop through irrigation? Another problem is that of finding more crops adapted to irrigation and to dry farming. Up in the mountains are many mining towns that have almost been abandoned. Can anything be done to restore the prosperity of these towns? One of the most valuable resources of the region is found in its climate and in the beauty of its scenery. What can be done to make these natural advantages more profitable?

The streams of the region can be made to supply unlimited water power. Can all this power ever be utilized? The forests of the region are enormously valuable. How can they be cared for so that they will be of great use in the future?

SOME RELATED PROBLEMS

1. Tell the story of a bushel of wheat raised by dry-farming methods.
2. Learn the routes of four of the most important railways crossing this group of states.
3. Why are the largest cities of Colorado situated upon the Great Plains rather than in the mountains? Why is the leading city of Montana located in the mountains rather than on the Great Plains?
4. Why did the early Indians of New Mexico and Arizona use little wood in building their houses?
5. Where in this region would you expect to find good hunting and fishing?
6. Contrast a day on a farm in Iowa with a day on a cattle ranch in Wyoming.
7. Explain why Great Salt Lake differs from most other lakes.

THE PACIFIC COAST STATES

81. WHAT THE MAPS, PICTURES, AND GRAPHS SHOW

Problems:

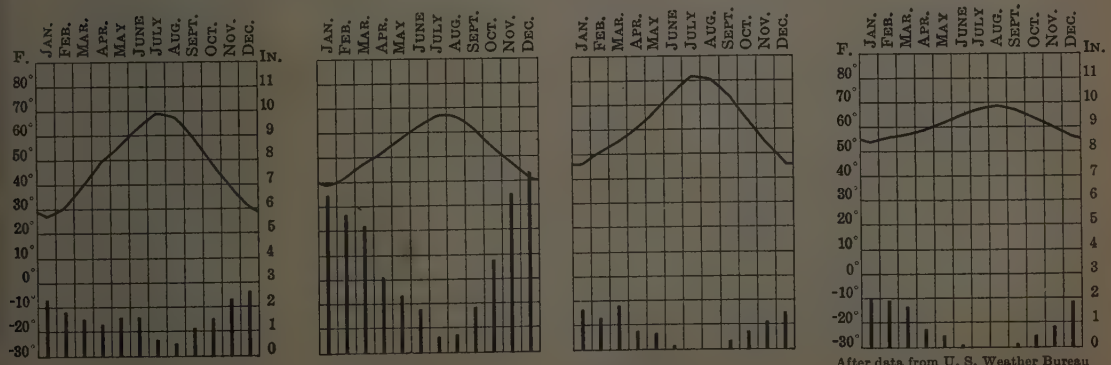
1. Why is the southern part of California a favorite winter resort? (*a*) What is its average winter temperature? How does it compare with the winter temperature of St. Louis and of New York? (Figs. 122, 225, and 497.) (*b*) How great is the winter rainfall compared with that of the summer? (Figs. 102, 103, and 225.) (*c*) What scenic features of this region are of unusual interest? (*d*) What out-of-door sports could be enjoyed in the winter?
2. How do the western coastal states compare with the eastern coastal states in population and industry? (*a*) Which group has the larger population? (See Appendix.) (*b*) In which group is there more land used for agriculture? (Fig. 94.) (*c*) Which group has the better transportation routes connecting it with the interior? (Fig. 89.) (*d*) Which one of these groups has the greater amount of available coal and iron? (Fig. 95.)
3. Why did the early explorers sailing along the western coast think that this entire region was mountainous? (*a*) What mountain ranges are nearest the coast? (*b*) Locate the gateways through these mountains to the valleys in the interior. (Fig. 208). (*c*) Are these gateways wide or narrow?
4. What do the maps show you as to the possibilities for water power in this area? (*a*) Where is the rainfall the greatest? (*b*) Why are there rapids and waterfalls in the streams? (*c*) Where are the forested areas? (Fig. 91.) (*d*) How do forests help retain rainfall and thus keep the soil from drying rapidly?

Questions:

1. How does California compare in length with your home state?
2. How does the Pacific coast line compare with that of the Atlantic in length and number of harbors?
3. What three important valleys are found in this group of states? (Fig. 208.)
4. What noted mountain peaks are found in the Sierra Nevada and in the Cascade Ranges?

Minimum essentials in location:

On an outline map be able to point out and name the following: three mountain ranges; four mountain peaks; four rivers; three water indentations; four national parks of this group of states; and the following cities: San Diego, San Francisco, Portland, Seattle, Tacoma, Spokane, Oakland, Los Angeles, Long Beach, Berkeley, Pasadena, Everett, Bellingham, Astoria.


F.
IN.
JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT. OCT. NOV. DEC.
80° 70° 60° 50° 40° 30° 20° 10° 0° -10° -20° -30°
11 10 9 8 7 6 5 4 3 2 1 0
After data from U. S. Weather Bureau

Spokane, Wash.
Alt. 1,909 ft. Temp. 48.2°
Rainfall 18.85 in.

Portland, Ore.
Alt. 51 ft. Temp. 53.1°
Rainfall 45.13 in.

Fresno, Calif.
Alt. 287 ft. Temp. 63.0°
Rainfall 9.73 in.

San Diego, Calif.
Alt. 42 ft. Temp. 61.0°
Rainfall 10.01 in.

FIG. 225. **Average annual temperature and rainfall for four cities of the Pacific Coast states**

FIG. 226. **The Golden Gate, San Francisco Bay.** This narrow channel which connects the bay with the Pacific Ocean is about five miles long and varies in width, its narrowest point being one mile wide. It protects the bay from storms and is deep enough to accommodate the largest ocean-going vessels.

In what ways do you think the city of San Francisco and its harbor can be compared with New York City and its harbor? What great valley gains access to the ocean through the Golden Gate?

82. SETTLING AND DEVELOPING THE FAR WEST

THE LESSON FORECAST

1. Distance of the mountain ranges from the coast in the eastern and western United States.
2. The gateways through the western coast ranges.
3. The attractions which lured people into the Far West.
4. Why agriculture has become more and more important here.
5. Advantages and disadvantages of this region for trade.

The eastern and the western coasts of the United States. We have learned that the Atlantic coast of the United States, mostly bordered by lowlands, has many harbors. Because the mountain ranges stand far back from the ocean, the eastern coast could be easily settled and developed. The Pacific coast is closely bordered by steep mountain ranges so that there is little room for settlements near the ocean, and there are few good harbors. In only three places are there breaks in the mountain wall through which vessels may reach the lowlands lying back of the coast ranges. These breaks are found at San Francisco Bay, at the Columbia River, and at Puget Sound (Figs. 208, 226, 239, and 241), farther north along the coast.

Why this region has developed slowly. Because of the rough and mountainous surface of this region and because it could not be easily reached overland from the East, it long remained but thinly settled. The first people who migrated into this region were Spaniards from Mexico. They settled in southern California. Along the streams sprang up a few fishing and hunting settlements. Now and then vessels engaged in the fur and hide trade came to these settlements. But for many years there were no other attempts made to settle this great region and almost nothing was known about its various resources.

The discovery of gold. In 1849 gold was discovered in the gravels of the rivers flowing from the Sierras, and fortune hunters from far and wide came swarming into this region. Prospectors, working mostly alone, eagerly searched for places where gold could be easily washed from the gravels. With a pick and shovel, some cooking utensils, and perhaps a mule to carry equipment, men by the thousands started out to hunt gold. Almost over night mining towns sprang up which quickly attracted other industries. Soon, however, the gold of the river gravels was exhausted, and it then became necessary to crush the hard gold-bearing rocks into a fine powder from which the gold could be

secured. Since expensive machinery was necessary for this process, mining companies were organized.

The changing occupations of the people of the region. This change in mining methods left many people free to develop the other resources of the region, which have proved to be far more valuable than its gold (Fig. 227). Today this group of states is famed for its forest products, its grazing, its agriculture, and its oil. It is also famed for its marvelous scenery and fine climate, especially that of winter.

The relation of the region to the rest of the country. Because of the development of their many natural resources, the states of this group are growing rapidly in population and in their importance to the rest of the country. Each year they send out great quantities of lumber (Figs. 36 and 228), cereals, canned fish, fruits, beef cattle and sheep, and many other useful products. Large cities have developed, and a number of ports are engaged in an extensive commerce with Alaska and with Asia and Australia. Because of the delightful climate, many people have gone to the Pacific coast states to live, while many others spend their winters in southern California. Every year many thousands visit the beautiful scenic regions in this section.

83. INFLUENCE OF SURFACE AND CLIMATE ON AGRICULTURE

THE LESSON FORECAST

1. Reason for the uneven distribution of rainfall.
2. Why irrigation is necessary in places.
3. Why the western slopes are more densely forested than the eastern slopes.
4. Why the plateaus east of the mountains are dry.
5. Three large lowland areas and their special importance.
6. Why little grain is shipped away.
7. Why the entire region is noted for its fruits.
8. Why this is a great lumbering region.

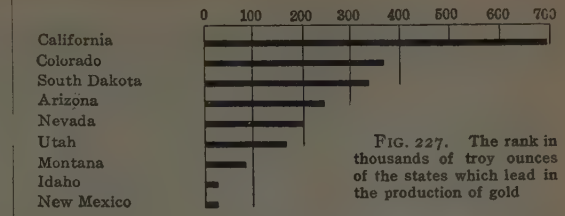


FIG. 227. The rank in thousands of troy ounces of the states which lead in the production of gold

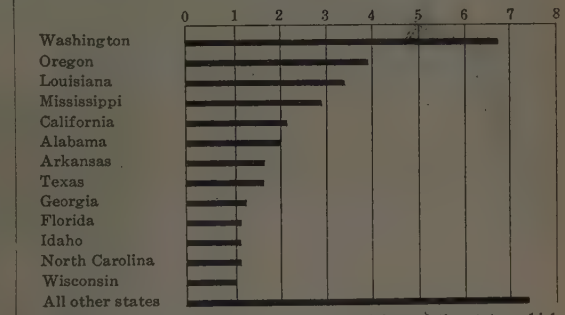


FIG. 228. The rank in billions of board feet of the states which ead in the production of lumber

The climate and agricultural activities of the coastal area. The three states of this group have a great variety of surface and climate. Most of the shore, as we have already learned, is bordered by the Coast Ranges, but in southern California the mountains lie far enough back from the ocean to afford room for towns and for farms. Here are Los Angeles (Fig. 238), with numerous surrounding towns, and San Diego, which lies close to the Mexican border. The Coast Ranges, because of their great height, receive a heavy rainfall, especially in the north. In the south this heavy rainfall is the source of water for the irrigation that is so necessary to the fruit and olive groves of southern California. In the northern part of this region the mountains are covered with heavy forests which are the principal source of lumber (Fig. 31) on the Pacific coast.

The high Sierras and the Cascades. The higher mountains of this region and also the highest in the country are the Sierra Nevada and the Cascades. Throughout these high ranges, which are heavily forested, are many deep valleys and high peaks, some of which

Ewing Galloway

FIG. 229. **Mount Rainier in winter time.** This fine view of the mountain was taken from Paradise Valley in Rainier National Park.

Mount Rainier, which is higher than Pikes Peak, is an ancient volcano. In winter moisture-bearing winds from the Pacific deposit heavy snows upon its crest and sides. From this snow field magnificent glaciers move slowly down the valleys. The lower slopes are densely timbered, and above the forests in summer flowers similar to those on the Alps are found.

In what mountain range is Mount Rainier located?

are snow-capped the year round. Among the best known and most visited are Mount Rainier (Fig. 229), Mount Hood, Mount Shasta, and Mount Whitney, which is the highest peak in the United States.

The climate and agriculture of the dry plateau regions. Lying to the east of these high mountain ranges are the dry plateaus with a climate similar to that of the Plateau states. This section is dry because the winds blowing in from the ocean lose their moisture on the western or windward side of the mountains (Fig. 495). In Washington the dry region is a great wheat and grazing area. The soils are deep and rich, and by the use of dry-farming methods large crops of grain can be raised

Larger valleys of the Far West. Between the Coast Ranges and the Cascades and the Sierra Nevada are three extensive lowlands, the Sacramento-San Joaquin Valley in the south, the Willamette Valley in Oregon, and still farther north the Puget Sound Basin or Lowland. With the exception of Spokane, Wash., and Los Angeles, Calif., all the larger cities of this group of states are found in these lowlands. Hence because of the fine climate and fertile soil and because of the advantage of being easily reached from the sea, many different crops flourish. The southern part of the Sacramento-San Joaquin Valley is famous for its production of prunes and raisins, which have been dried in the bright, warm days of late summer and early autumn. Here also are found great vegetable gardens and extensive wheat fields.

The Imperial Valley. In southern California, bordering on Mexico, is the famous Imperial Valley, where, as the name suggests, conditions are favorable for making a living. The soil is extremely fertile when irrigated, the sun shines clear most of the time, the days are always warm, and plants grow rapidly. Cotton, dates, fruits, vegetables (Fig. 8), and other crops are grown with great success, and the region is one of the famous desert oases of the world.

Interesting contrasts in vegetation. As we have already learned, the natural resources of this section and the crops grown are largely due to the nature of the surface and to the climate. Everywhere except on the higher mountains and in the region to the east of them the climate is warm, even in winter. Most of the rain falls during the winter months (Fig. 103). The summer months are dry and in many regions vegetation soon becomes brown. But with the fall rains grass and trees again become green and in the south remain so all through the winter.

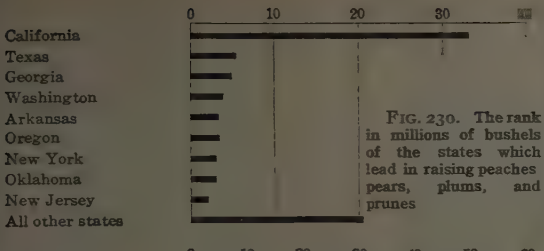


FIG. 230. The rank in millions of bushels of the states which lead in raising peaches pears, plums, and prunes

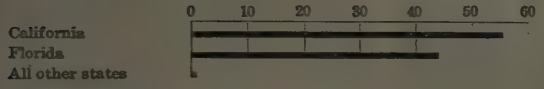


FIG. 231. The rank in thousands of car lots of the states which lead in the production of citrus fruits

Throughout the region the mountains are forest covered while the lowlands are given over to grazing or farming. In southeastern California there is a small area which is so dry as to be an actual desert. But in most of the dry regions irrigation (Fig. 218) makes it possible to grow many crops successfully because of the rich soil, the high temperatures of summer, and the abundance of sunlight.

Marketing farm, orchard, and garden crops. Washington, Oregon, and California produce large quantities of wheat. Most of the California product is needed at home, but large quantities are exported from Oregon and Washington (Fig. 183). In the eastern parts of these two states and in the northern part of California both sheep and cattle are raised extensively.

Many of the river valleys of Washington and Oregon are famous for their apple, pear, and peach orchards (Fig. 230). Much fruit is grown under irrigation. Central California specializes in grapes, plums, prunes, raisins, and other fruits. Southwestern California and Florida produce practically all of the citrus fruits of the entire country (Figs. 43 and 231). California ranks first in the production of oranges and is also noted for its lemons, grapefruit, nuts, dates, and olives (Fig. 232). All fruits can be sent to the eastern markets by rail in refrigerator cars. In these cars fruits and vegetables such as lettuce and asparagus can be kept in excellent condition during the days required to carry them across the continent to market.

La-Cal Pictures, Los Angeles

FIG. 232. **Picking dates in southern California.** Until recently almost all the dates produced in this country were grown in Arizona. Now quantities of dates are grown in the irrigated lands near Salton Sink, California. What other parts of the world produce dates? On what kind of tree do they grow?

Southern California also produces large crops of the seeds of many kinds of flowers and of common vegetables. These seed crops are among the most important products of this section. The seeds grown in the California fields are shipped to all parts of the country.

The Pacific coast products from farms and ranches rank high in value. Since many of these products cannot be grown in any other part of the country, the states of this group are an important source of the food supply of the nation.

The great lumber industry of the Pacific. In Washington and Oregon the mountain forests are now the most important source of the lumber supply for the eastern states.

Asahel Curtis Photo Co., Seattle

FIG. 233. **A log boom on its way to the mill in Washington.** Lumbering in the Northwest is carried on chiefly in the more rugged mountain districts. Wherever possible, rivers are used to transport the logs to the sawmills, for this is a cheap and easy means. When ready, the logs are shot down the mountain sides through long flumes to the river. Find out what you can about flumes. Do you know in what season of the year it is easiest to bring out logs in this way?

What is the most valuable timber found in the Northwest? (Fig. 96.) Name other timber trees found there.

Most of these forest trees grow very high. In some places trees two hundred feet high are not uncommon, while some of them measure five and six feet and even more in diameter. These evergreen trees thrive here because of the abundant moisture and the mild climate. When cut, the great logs are taken by train or boat or floated on streams to sawmills located along the shore, from which the lumber is shipped to market largely by water (Figs. 36, 96, 228, and 233).

84. RESOURCES FROM THE EARTH AND THE WATER

THE LESSON FORECAST

1. Where fish are caught in great numbers.
2. How gold and petroleum compare in usefulness and in value.
3. Why the lack of coal and iron is a handicap.

The growth and importance of the fishing industry. Another product of this group of states which ranks high in importance is fish, especially salmon and tuna. From the Columbia River to Alaska, salmon are caught each year in great numbers as they come up the streams from the ocean (Fig. 79). By far the greater part of the salmon is canned and shipped to markets in all parts of the world.

The rich mineral resources of this region. The mineral products of this group of states are also of great value. Today the mining of gold, silver, and other precious metals is not so important as the production of petroleum. But California still ranks first in the production of gold as well as in the production of petroleum which is much used as a fuel, and from which gasoline is made (Figs. 227, 234, and 235).

How the states secure the necessary power. The Pacific Coast states have little coal and no iron. Hence they must import steel for the construction of buildings and railroads. But the mountain streams furnish an abundance of water power (Fig. 512) for making electricity. This power can be carried long distances by cable, and is therefore used extensively throughout this section.

85. DEVELOPMENT OF MANUFACTURING AND TRADE

THE LESSON FORECAST

1. Why the number of manufactures is limited.
2. Why sugar refining is an important industry.
3. Why the canning and drying of fruit is a great industry.
4. Reasons for the great development of trade.

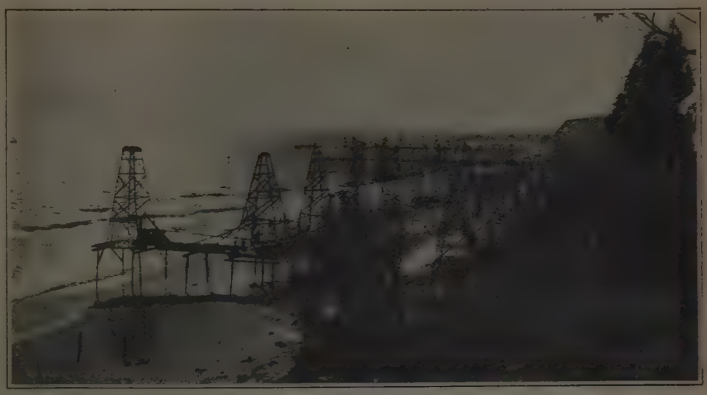


FIG. 234. **Oil derricks along the California coast.** This is a view of the Summerland field on the Pacific coast a few miles south of Santa Barbara (Fig. 208). The petroleum obtained here comes from under the ocean. Some of the oil wells in this region yield as many as 3,000 barrels a day.

What other natural resource besides petroleum do we use for heat and power? Can you explain why California is specially fortunate in having such large deposits of oil?

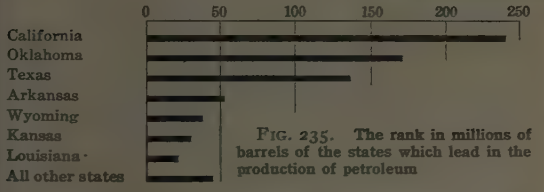


FIG. 235. **The rank in millions of barrels of the states which lead in the production of petroleum**

Influence of the distance between these states and other industrial centers. Much of the manufacturing carried on in these states is that of products to be used locally. Because of the great distance from eastern markets, few products are shipped away except those difficult to produce elsewhere. Of most value among these products is lumber, although canned goods and fresh and dried fruits are also of great value.

Raw sugar from Hawaii is refined at several cities on San Francisco Bay. The raw product is brought direct by boat to the refineries, just as the raw sugar of Cuba is brought to the refineries around New York City. This section is rapidly increasing its manufacture of such articles as cutlery, shoes, hats, and clothes. These articles are all used at home, for they can be produced equally as well in other parts of the country.

Reasons for the development of the motion-picture industry. One of the industries for which this region is probably most widely known is the motion-picture industry carried on around Los Angeles. Since rainy days are few and sunshine is unusually bright, good pictures can be taken here out-of-doors at any season. Another great advantage is found in the fact that the surrounding country offers many and varied natural settings.

The recent development of trade. As we have seen, there may be found in this group of states many different occupations, some of which are of much importance to the rest of the country. But not all the people are engaged in manufacturing, agriculture, grazing, or mining, for many are carrying on the rapidly increasing commerce. The opening of the Panama Canal has made possible an extensive commerce by water with the East. The development of Alaska has brought about a large trade with that region, while our trade with Hawaii, Australia, Japan, China, and the Philippines is growing rapidly. The ports, therefore, on San Francisco Bay, the Columbia and the Willamette rivers, and Puget Sound are becoming great trade and commercial centers (Fig. 208).

86. SCENIC FEATURES OF THE FAR WEST

THE LESSON FORECAST

1. What are the special attractions of Yosemite Valley and the Sierras.
2. Dormant and active volcanoes of this region.

A land of rare scenic attractions. Like the Plateau states, the Pacific Coast states are noted for their scenic attractions which include a number of national parks visited

FIG. 236. **Beautiful Lake Chelan, Washington.** In the Cascade Ranges of Washington are many lakes, the largest of which is Lake Chelan, about three miles wide and seventy miles long. With its deep, clear waters surrounded by forested slopes and snow-capped peaks, this lake is an attractive place for vacationists.

annually by great numbers of people. The clear skies and dry air of their summers, the lofty mountains, and the forests with their giant trees are especially attractive to visitors (Fig. 236).

The beautiful valleys of the Sierras. Of all the deep and wonderful valleys found in the western slope of the Sierras, Yosemite Valley is the most famous and probably the most visited. Here majestic cliffs rise thousands of feet from the floor of the valley, and great waterfalls break the course of the Yosemite River which plunges over the cliffs through beautiful clouds of spray.

The world's biggest trees. In a number of places in the Sierras and on the Coast Ranges are groves of big trees. These sequoias or redwoods are the largest trees known and the oldest living things in the world. Some of these trees stand over three hundred feet high and are so large that an automobile can be driven through a tunnel cut through the trunk. A grove of these giant trees is not only beautiful but also most impressive when one recalls the fact that many of the great trees are several thousand years old.

Volcanic craters and peaks. Another spot of great beauty is Crater Lake in Oregon National Park. This beautiful sheet of water is entirely surrounded by high, vividly colored rock cliffs which tower a thousand feet above it. The deep-blue waters of this lake are astonishingly clear.

In northern California is Lassen Peak, the only active volcano in the United States. Snow-capped Rainier (Figs. 208 and 229) in Rainier National Park is an extinct volcano. Volcanoes are formed by heated rocks and gas blown out from beneath the surface. These materials, if not heated hot enough to be liquid, pile up about the opening and build up a cone, sometimes mountainous in size. There are in this country many other peaks which were formed by volcanic eruptions, but these peaks are now all inactive.

87. THE CITIES AND THE PROBLEMS OF THE PEOPLE

THE LESSON FORECAST

1. Relation of the location of the larger cities to the natural waterways.
2. How Los Angeles made itself a good harbor.
3. Reasons for the location and growth of San Francisco.
4. Why the site of Portland is an advantageous one for trade and transportation.
5. Why certain cities on Puget Sound are growing rapidly.
6. Advantages of certain cities in eastern Washington.
7. Problems of the region.

The cities of California. With the exception of Los Angeles, all the larger cities of California are either located upon good harbors (Fig. 239) or are river towns with trading or manufacturing facilities. Los Angeles, the largest city on the Pacific coast (Fig. 238), has grown rapidly in recent years. Its port, San Pedro Harbor, was formed by building a breakwater that protects the anchored vessels from the force of the waves. The city has good rail connections with the East and the North and is the leading center of the fruit industry. Los Angeles is also a thriving manufacturing and business center and is widely known for its beautiful homes.

San Francisco (Fig. 237), the second largest city on the coast, was one of the first to be settled. It is located on San Francisco Bay, one of the largest and best-protected harbors of the world (Fig. 239). This bay is connected with the Pacific by the famous Golden Gate (Fig. 226), one mile wide. At certain seasons of the year the sun sets in this narrow strait, flooding it and the harbor with a golden light which gave the strait its name. Lying across the bay to the east are several cities, among which Oakland and Berkeley lead in importance. Here are the terminal stations of a number of great railways that either cross the high Sierras or, following the Sacramento-San Joaquin Valley southward, use a low pass to the East. The location of these cities upon the western slopes of the hills gives them the benefit of the cool breezes which blow across the waters of the bay.

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FIG. 238. **Los Angeles and its harbor, San Pedro.** Note the "shoe-string strip" connecting the city with its harbor. This harbor is protected from storms by a great breakwater. What mountains furnish a near-by recreation ground? Where does Los Angeles obtain its chief water supply? (See aqueduct, Fig. 208.)

FIG. 237. **A part of San Francisco's water front.** The water front is eight miles in length, five miles being devoted to commercial use. What city can be seen across the bay? (See Fig. 239.) Is it an advantage to have the business district close to the water front? Give the reasons for your answer.

The manufacturing town of Stockton and Sacramento, the capital, are situated upon rivers which drain the Sacramento-San Joaquin Valley, and have connection by boat with San Francisco. Farther south in the valley is Fresno, which is the center of the raisin industry.

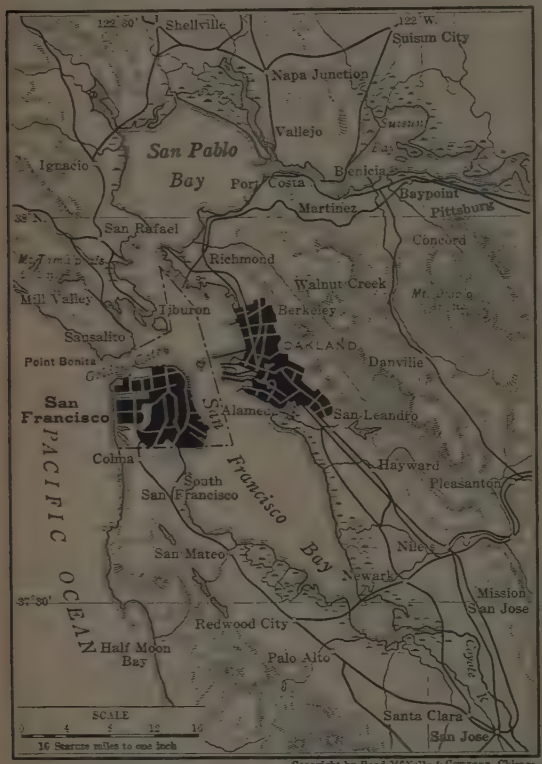

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FIG. 239. **San Francisco, Oakland, and the neighboring towns of the region**

Chief cities of Oregon and Washington. Portland (Fig. 240), the largest city of Oregon, like San Francisco, lies inside the Coast Ranges. It is a great lumbering town, the trade center of the Willamette Valley, and the greatest wheat port of the Pacific coast. Railways connect it with the East by way of the Columbia River which rises east of the mountain ranges. Astoria on the Columbia, ten miles from the ocean, is a thriving port. The Columbia River Highway (Fig. 88) is one of the most beautiful scenic routes in our country.

On Puget Sound lie several cities, of which Seattle is the largest (Fig. 241). These cities are connected with the East by railroads. Seattle is the center of the rapidly growing trade with Alaska and Asia, for it has the advantage of being the American port lying nearest Japan and China.

In the eastern part of Washington is situated Spokane, with abundant power furnished by the river of the same name. Spokane is a busy manufacturing city in the great wheat section of eastern Washington.

Problems of the present and the future. The Pacific Coast states have vast natural

Courtesy Chamber of Commerce, Portland, Ore.

FIG. 240. **One view of Portland's fine harbor.** In the picture may be seen two piers and one of Portland's great terminal warehouses. Find out how far it is from Portland to the ocean highway. In what great valley does Portland lie?

resources the products of which will soon be needed by the more densely populated areas of the East. The mild and even climate of the region will of course constantly induce people to settle there.

The problem of how best to use the forests of the Far West is one that calls for careful consideration.

Our commerce with Asia and Australia will undoubtedly increase greatly, and the states and cities of the Pacific coast will benefit from this trade. In what ways can the commercial and manufacturing activities of this region be encouraged? The abundance of water power not yet harnessed for work makes possible a great increase of manufacturing to meet the needs of the people. Just how rapidly may this power be developed and how may it be used to the best advantage?

Where water can be had for irrigation, agriculture can be increased greatly and sections now used for grazing may some day be planted to crops. The problem is to learn just what crops can be raised to the best advantage and what proportion of the land may be thus used. The future of agriculture in the West is far more promising than could ever have been imagined by those who first came seeking gold or furs.

Most of the immigrants who came from China and Japan entered the country through the ports of this region. The larger number settled near the Pacific coast where it is not difficult for them to make a living. Some of them have taken up the raising of fruits and vegetables and form settlements entirely made up of their own people. In many ways they compete with the white people of the country. The states in this group are therefore interested in restricting the number of Asiatic immigrants.

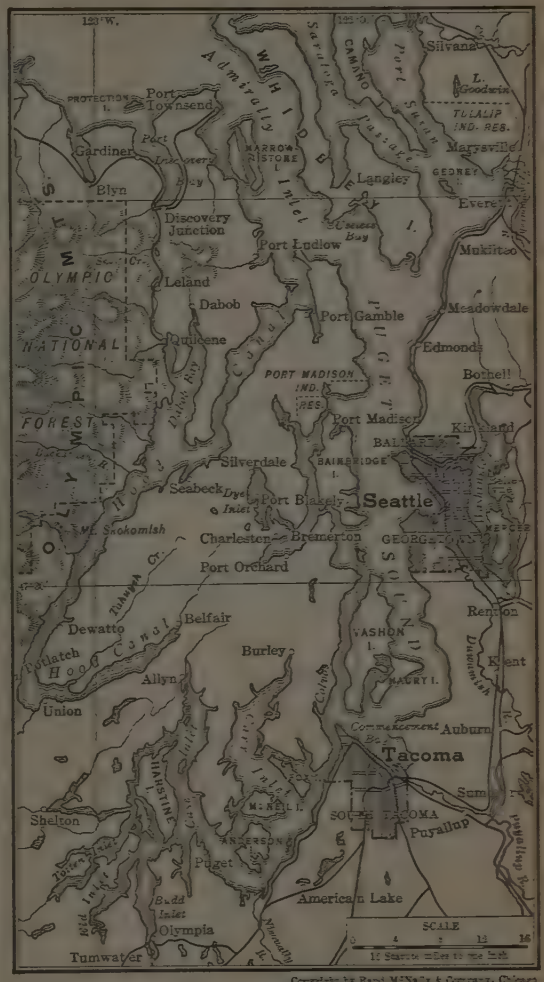

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FIG. 241. **Puget Sound and the Sound ports.** This drowned valley extending far inland is our largest Pacific coast harbor. From a globe find out the distance from Seattle to Alaska and Yokohama; from San Francisco. Compare these distances.

SOME RELATED PROBLEMS

1. Why are the forests heaviest on the western slopes of the mountains?
2. Why do forests grow more luxuriantly in Washington than in California?
3. Why is Spokane often spoken of as the "Minneapolis of the West"?
4. How have railroads made possible the great fruit industry of the Far West?
5. Compare the winter climate of Washington and Oregon with that of the Dakotas.
6. Why has Portland grown more rapidly than Astoria?
7. Why is eastern Oregon a live-stock country and eastern Washington a farming region?

THE DISTANT POSSESSIONS OF THE UNITED STATES

88. HOW TO LOCATE PLACES ON THE EARTH

THE LESSON FORECAST

1. How the curved surface of the earth is represented on a map.
2. How latitude is measured. How longitude is measured.
3. The use of parallels and meridians in locating places.
4. How to find the longitude and latitude of a given place.
5. How one can always read directions from a map.
6. The starting points for locating places by longitude and latitude.

How the earth's surface is represented on a map. Thus far we have been studying only our own country. Now we are going to study various dependencies, all under our government but located in different parts of the world. In order to learn where these dependencies are we need to be able to read a world map. We need to know how far away they are from us and in what direction they lie. We must learn, therefore, how distance is measured and how direction is shown on a map of the world or of any large part of the world.

The world is round, but a map must be shown upon a flat piece of paper. That means the map must represent a curved surface spread out as a flat area.

How places are located in our national capital. In any large city there must be a certain point at which the naming or numbering of the streets begins. In Washington, D. C., the Capitol is taken as the starting point. The street running north from the Capitol is named Capitol St. North and the same street running south is Capitol St. South. The east-west street from the same point is named Capitol St. East and Capitol St. West. Streets running parallel with Capitol St. North and Capitol St. South are lettered, as A St. North, A St. South, and so on through the alphabet. Streets parallel with Capitol St. East and Capitol St. West are given numbers as 1st St. West and 1st St. East. Thus any place in the city can easily be located if the names of the streets which cross near it are known (Fig. 242).

What is meant by latitude and parallels. In studying direction and distance on a globe or on the world map we must have starting points from which to measure north and south, or east and west. The Equator, which is an imaginary line around the earth halfway between the poles, is the natural place from which to measure distance north or south. A line parallel to the Equator represents the location of all points the same distance from the Equator just as any lettered street in Washington shows the location of points the same distance from the Capitol. Distance north or south from the Equator is called latitude, and is measured in degrees or parts of the quarter-circle that extends from the Equator to either pole. Since circles are commonly divided into 360 parts or degrees, a quarter of a circle would contain 90 degrees. We thus have north and south latitude, in each case numbered from 0° at the Equator to 90° north or south at the poles.

What is meant by longitude and meridians. Years ago an imaginary north-south line drawn through Greenwich, England (Appendix, Fig. 494), to the poles was established as a starting place from which distances around the world east and west could be measured. This line is known as the prime meridian. Distances east or west of the prime meridian are measured in degrees and are spoken of as longitude. East longitude is measured to 180°, halfway around the world from the prime meridian, and west longitude is also measured to the same line.

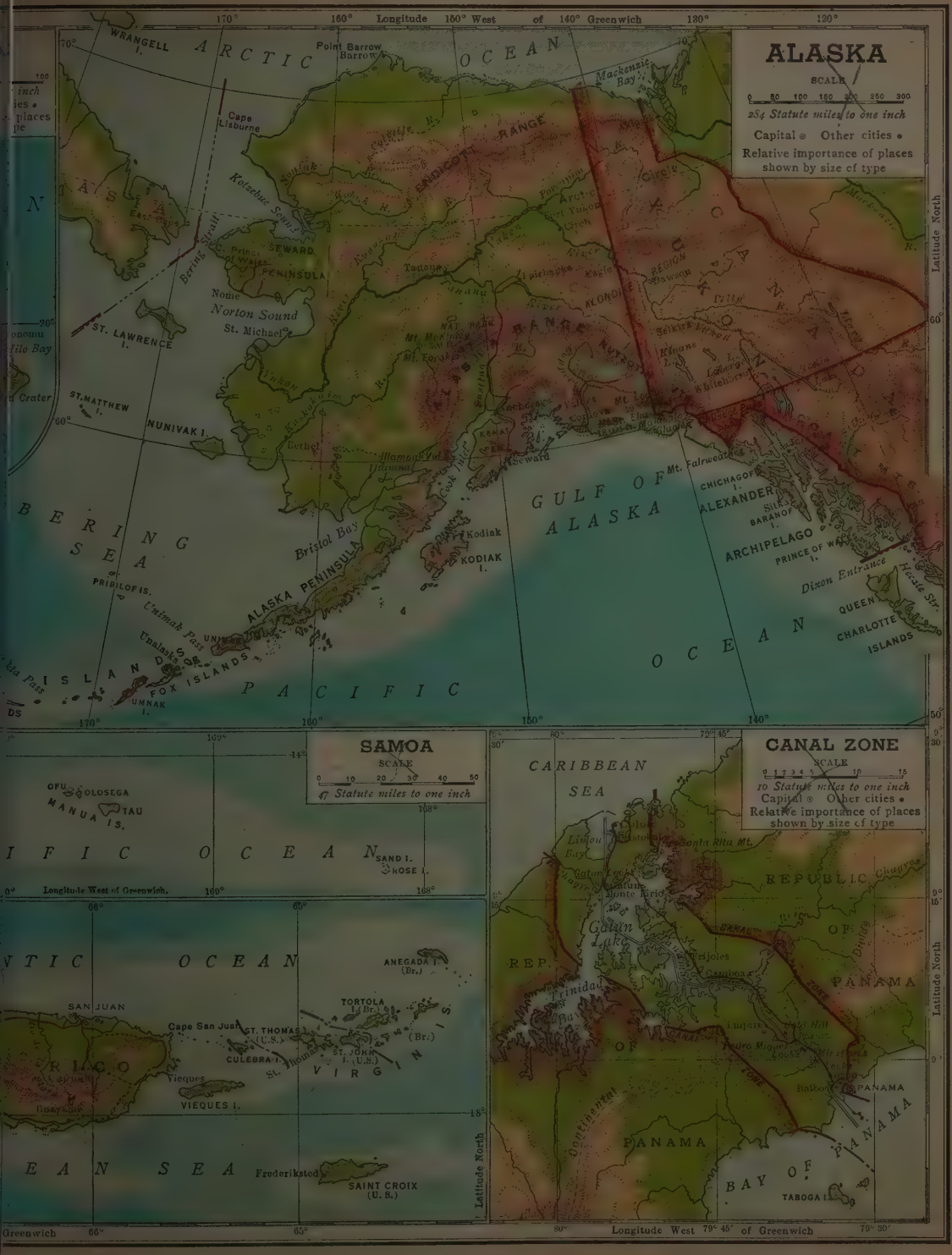
FIG. 242. **An airplane view of Washington, D. C.** North and east of the Capitol, the large building with the dome in the center of the picture, is the Senate Office Building shaped like a U, and facing Delaware Ave. on the left. Try to identify other government buildings. The next street to the left of Delaware Ave. is Capitol St. North. See if you can find Capitol St. South, directly across the grounds of the Capitol. Find Capitol St. East. To the left of the Capitol is the Botanical Garden.

How to use longitude and latitude. By referring to a globe or a map of the world we can locate any place by its latitude and longitude; that is, by its distance in degrees from the Equator and from the prime meridian. For instance, on the map of the United States (Fig. 89) we find that the latitude of Denver is 40° N. and that its longitude is 105° W. New Orleans is 90° W. longitude. Thus the distance from the New Orleans meridian to the Denver meridian wherever measured on the same parallel is 15° or one-twenty-fourth of the distance around the world on the same parallel.

On a map or globe meridians and parallels are shown by continuous lines. On a map covering a small area meridians usually extend from the top to the bottom of the map, and parallels from side to side (Fig. 118). But on maps covering large sections drawn to show the size of the area correctly, the meridians and parallels are not so drawn (Fig. 78). In other words, the top of a map is not always north or the sides of a map true east and west. When we read direction on a map we must first note the way the meridians and parallels are shown. (Compare Figs. 78, 79, 176.)

Maps used for certain purposes, where the proportions of a region need not be shown with absolute correctness, are drawn with the meridians and parallels always crossing each other at right angles. On such maps a parallel near the poles appears to be as long as the Equator, which is, of course, not true. These maps (Appendix, Fig. 494) are not drawn, as we say, to scale. They have no scale shown on them, and distances from place to place therefore cannot be measured on these maps as they can be on maps such as Fig. 78 and the other continent maps in this book. Neither is it possible to compare the size of two areas.

PHILIPPINES
100 Statute miles to one inch
Capital ⊛ Other cities •
Relative importance of places shown by size of type
MANILA BAY
SCALE
47 Statute miles to one inch
HONOLULU HARBOR
SCALE
12 Statute miles to one inch
GUAM
SCALE
32 Statute miles to one inch
PORTO RICO AND VIRGIN ISLANDS
SCALE
47 Statute miles to one inch
Capital ⊛ Other cities •
Relative importance of places shown by size of type
PORT PONCE
SCALE
SAN JUAN HARBOR
SCALE
CITIES AND TOWNS
Type indicates size of cities on all maps.
Cities of 100 000 and over ..... Manila
Cities of 50 000 to 100 000 .... HONOLULU
Cities of 10 000 to 50 000 ..... Iloilo
Cities of less than 10 000 ..... Guayama
Railroads —— Canal ——
Longitude East of Greenwich
Longitude West of Greenwich
Latitude North
Latitude South
PACIFIC OCEAN
SOUTH CHINA SEA
SULU SEA
CELEBES SEA
CARIBBEAN SEA
ATLANTIC OCEAN
Manila Bay
Balintang Channel
Balabac Strait
Kauai Channel
Alenuihaha Channel
Pailolo Chan.
Mona Passage
Manila
Honolulu
Pago Pago
Puerto Princesa
Zamboanga
Iloilo
Cape Engano
C. Bolinao
Diamond Head
Keahole Pt.
Upolu Pt.
Hana
Kahului
Lihue
Kaena Pt.
Kahuku Pt.
Pati Pt.
Agaña
Agaña Bay
Pago Pago Bay
Cocos I.
Attu
Near Is.
Rat Is.
Aleutian Is.
Andreanof
Cooks Comb Pt.
C. Matatula
Tutuila
Steps Pt.
Double Pt.
Matafao Pt.
Haiti
Saona I.
Mona I.
Desecheo I.
Pt. Jiguero
Morito I.
Cape Rojo
Port Ponce
Cuchara Pt.
Gardona
Morro Pt.
Isla Grande
San Juan
Harbor
Balo Seco
Arecibo
Ponce
Las Salinas
Sandakan
Jolo
Basilan
Isabela
Dava Gulf
Mindoro
Catanduanes
Masbate
Samar
Leyte
Cebu
Negros
Panay
Cuyo Is.
Calamian Group
Palawan
Polillo
Batan Is.
Babuyan Is.
Corregidor I.
Subic
Olongapo
Lingayen
Lingayen Gulf
Laguna de Bay
Taal
Mayon
Kauai
Niihau
Lehau
Oahu
Molokai
Lanai
Maui
Kahoolawe
Waikiki
Pearl City
Waipahu
Waianae
Waialua
Kaneohe
Honolulu
Pearl Harbor
Aiea
Ewa
Barbers Pt.
Kaena Pt.
Pago Pago Harbor
U.S. Naval Sta.
Long. W. of Greenwich
Long. E. of Greenwich
Long. West 157°50' of Greenwich
Sulu Archipelago
Br. North Borneo
Cagayan
Tuguegarao
Aparri
Vigan
Baguio
Dagupan
Olongapo
Subic
Iba
Olongapo
Lucena
Batangas
Tagaytay
Taal
Mayon
Legaspi
Naga
Iriga
Catarman
Calbayog
Tacloban
Ormoc
Maasin
Surigao
Cotabato
Davao
Zamboanga
Basilan
Isabela
Jolo
Sandakan
Tawitawi
Balabac
Puerto Princesa
Iloilo
Bacolod
Roxas
Kalibo
Dumaguete
Cebu
Tagbilaran
Ormoc
Tacloban
Catbalogan
Calbayog
Catarman
Masbate
Legaspi
Naga
Lucena
Batangas
Tagaytay
Mindoro
Polillo
Batan Is.
Babuyan Is.
Cape Engano
Aparri
Tuguegarao
Vigan
Baguio
Dagupan
Lingayen
Lingayen Gulf
Subic
Olongapo
Iba
Corregidor I.
Manila
Manila Bay
Laguna de Bay
Taal
Mayon
Legaspi
Naga
Iriga
Catarman
Calbayog
Tacloban
Ormoc
Maasin
Surigao
Cotabato
Davao
Zamboanga
Basilan
Isabela
Jolo
Sandakan
Tawitawi
Balabac
Puerto Princesa
Iloilo
Bacolod
Roxas
Kalibo
Dumaguete
Cebu
Tagbilaran
Catbalogan
Samar
Leyte
Cebu
Negros
Panay
Cuyo Is.
Calamian Group
Palawan
Polillo
Batan Is.
Babuyan Is.
Cape Engano
C. Bolinao


ALASKA
SCALE
0 50 100 150 200 250 300
254 Statute miles to one inch
Capital ⊙ Other cities •
Relative importance of places shown by size of type
SAMOA
SCALE
0 10 20 30 40 50
47 Statute miles to one inch
CANAL ZONE
SCALE
0 1 2 3 4 5 10 15
10 Statute miles to one inch
Capital ⊙ Other cities •
Relative importance of places shown by size of type
ARCTIC OCEAN
BERING SEA
GULF OF ALASKA
PACIFIC OCEAN
CARIBBEAN SEA
WRANGELL I.
Point Barrow
Barrow
Mackenzie Bay
Cape Lisburne
ENDICOTT RANGE
Kotzebue Sound
Bering Strait
SEWARD PENINSULA
Nome
Norton Sound
St. Michael
ST. LAWRENCE I.
ST. MATTHEW I.
NUNIVAK I.
Bethel
Seward
Mt. McKinley
Mt. Logan
Mt. Fairweather
CHICHAGOF I.
ALEXANDER ARCHIPELAGO
SITKA
BARANOF I.
PRINCE OF WALES I.
Dixon Entrance
Haines
QUEEN CHARLOTTE ISLANDS
Bristol Bay
ALASKA PENINSULA
Kodiak
KODIAK I.
PRIBILOF IS.
Unimak Pass
UNIMAK I.
Unalaska
FOX ISLANDS
UMNAK I.
Latitude North
Longitude West of Greenwich
170°
160°
150°
140°
130°
120°
70°
60°
50°
OFU
OLOSEGA
TAU
MANUA IS.
SAND I.
ROSE I.
Longitude West of Greenwich
169°
168°
14°
ANEGADA I. (Br.)
SAN JUAN
TORTOLA I. (Br.)
Cape San Juan
ST. THOMAS (U.S.)
ST. JOHN I. (U.S.)
CULEBRA I.
Vieques
VIEQUES I.
VIRGIN IS.
(Br.)
Frederiksted
SAINT CROIX (U.S.)
Greenwich
66°
65°
18°
Limon Bay
Gatun
Gatun Lake
Pedro Miguel
Miraflores
Panama
Balboa
Taboga I.
Bay of Panama
Republic of Panama
Canal Zone
80°
79° 45'
79° 30'
15°
10°
5°
0°

89. WHAT THE MAPS, TABLES, AND GRAPHS SHOW

Problems:

1. In what latitude and longitude is each of the important possessions of the United States? (Fig. 243.) (*a*) Fill in a table like the one below giving the longitude and latitude of each of the places named. Use a globe, the world map, and the inset maps (Figs. 243 and 509.) (*b*) On a globe meridians are numbered along the Equator and parallels on the prime meridian. (*c*) On a map meridians are usually numbered at the top and the bottom and parallels on the right and left margins.

Place	Longitude	Latitude
Washington, D. C.	77° W. longitude	39° N. latitude
Porto Rico		
Manila, Philippine Islands		
Canal Zone		
Hawaiian Islands		
Seward, Alaska		
Virgin Islands		
Guam		
Tutuila		

2. How many miles are there in a degree of latitude at different distances from the Equator? (*a*) How many miles in 5° of latitude on the map of the Philippines? (Fig. 243.) How many in 1°? (Use the scale of miles.) (*b*) How many miles in 10° of latitude on the map of Alaska? in 1°? (Use the scale of miles.) (*c*) How do the number of miles in a degree of latitude in these two maps compare? (*d*) Using the map of Eurasia (Fig. 427), study places at different distances from the Equator and see if you get a similar answer. (*e*) What determines the number of miles in a degree of latitude?

3. How many miles are there in a degree of longitude at different distances from the Equator? (*a*) How many miles are there in 1° of longitude on the Equator? (Fig. 288.) (*b*) How many miles 30° from the Equator? (Fig. 303.) (*c*) How many miles 60° from the Equator? (Fig. 243.) (*d*) How many miles 80° from the Equator? (Fig. 509.) (*e*) How many miles 90° from the Equator? (*f*) State a rule relative to the number of miles in a degree of longitude at different distances from the Equator and give the reason.

4. What great differences in rainfall and temperature in Alaska and the Hawaiian Islands largely account for the differences in human activities in the two regions? (Fig. 244.) (*a*) Explain in terms of latitude the higher average temperature in the Hawaiian Islands as compared with Alaska. (*b*) Explain likewise the great seasonal differences between the two regions. (*c*) Give two reasons why the

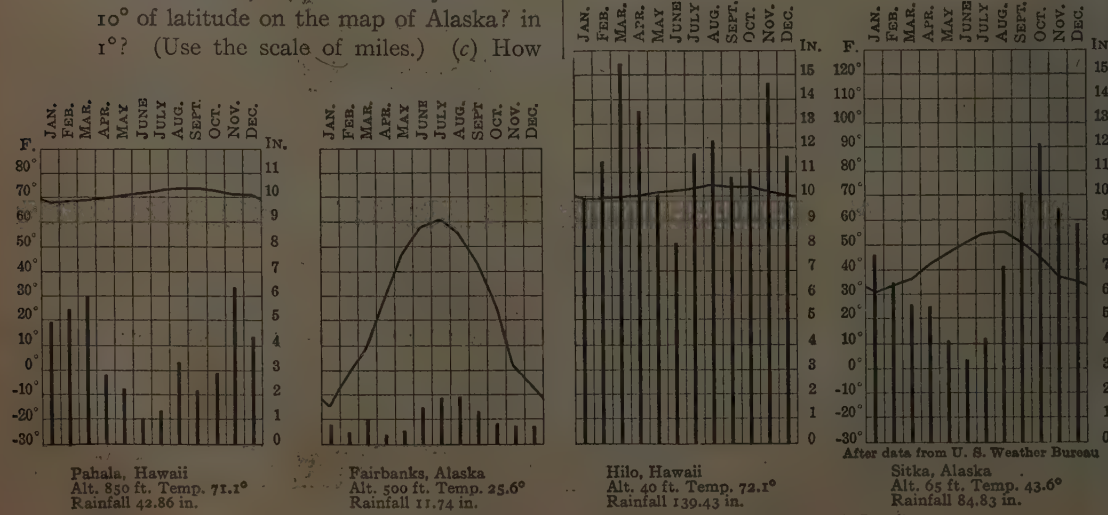


FIG. 244. Average annual temperature and rainfall for four towns of Alaska and Hawaii

difference in temperature between January and July at Fairbanks is greater than at Sitka. (*d*) How do you explain the difference in rainfall between Sitka and Fairbanks? (*e*) The Hawaiian Islands are in the northeast trade winds. How does this help explain the difference in rainfall between Hilo and Pahala? (*f*) Note the difference in altitude between Hilo and Pahala, and tell why one has a higher average temperature than the other. (*g*) Why is there not a great difference in temperature between January and July at the Hawaiian stations?

5. Why would you expect the climate of the Philippines to be more like that of the Hawaiian Islands than like that of Alaska? (Appendix, Figs. 494 and 498.)

90. ALASKA: A LAND OF GREAT RICHES

THE LESSON FORECAST

1. The resources and surface features of Alaska.
2. The variations of climate.
3. The types of vegetation found at different latitudes.
4. The wealth secured from the ocean and streams.
5. Why farming thrives in certain parts of interior Alaska.
6. Certain handicaps in transportation.
7. The people and cities.
8. How Alaska could be made more valuable to the United States.

Why Alaska has proved to be a valuable possession. In 1867 Russia sold Alaska to the United States for $7,200,000. Many people said that was a large price to pay for what they thought was a worthless tract of land, but Alaska has proved to be a region rich in many resources. In 1926 the value of the salmon canned there was more than six times the purchase price, while the value of Alaska's exports to the United States exceeded $70,000,000 (Fig. 245).

Alaska is more than twice the size of Texas, and has a great variety of climate and of surface features. Its many resources have been only partly developed. It is a land the future of which has great promise.

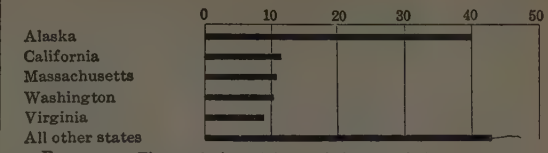


FIG. 245. **The rank in millions of dollars of the states which lead in fishery products**

The great diversity of surface and climate. The larger physical divisions of Alaska extend nearly parallel to the curving coast line which incloses the Gulf of Alaska. Lying next to the Pacific Ocean is a broad highland, a continuation of the Cordilleran Highland of the United States and Canada. This highland is made up of several ranges. Along the Arctic coast is the low-lying Arctic Plain. South of the Arctic Plain, running roughly parallel with it, is a lesser highland known as the Endicott or Brooks Range. Between the two highlands lies the Yukon Upland drained by the Yukon River.

In the greater highland are many high peaks, including Mount McKinley (Fig. 243), the highest mountain in North America. Within this area are found a number of active volcanoes. One of these, Mount Katmai, with the near-by "Valley of Ten Thousand Smokes," has been made a national monument. Such a monument is an area that has been set aside by the government to be preserved and cared for so that its scenic features may be always enjoyed by visitors.

This greater highland extends beyond the coast of southwest Alaska about a thousand miles into the ocean. But only the higher peaks extend above the surface of the ocean. These peaks form a long chain of islands known as the Aleutian Islands (Fig. 243).

Along the southern coast of Alaska the climate is moist and warm, with a winter climate no colder than that of New York City. The rainfall here is unusually heavy (Fig. 244), and for this reason large forests are found on the lower southern slopes of the

From U. S. Geological Survey

FIG. 246. **The Kennecott copper mines at Kennecott, Alaska.** Kennecott lies in the Copper River region which has rich deposits of copper ore (map, Fig. 243). It is connected by rail with Cordova on the coast.

The mining plant consists of several buildings, for here all the ore is concentrated or separated from the rock and other waste materials. The product, known as concentrates, is shipped to the United States to be smelted. Try to learn why the smelting is not done at the Kennecott plant.

Coast Mountains. In places these forests stretch upward to an elevation of 2,500 or 3,000 feet. Still higher up on the mountains are snow fields and glaciers, some of which extend down the valleys to the ocean.

In the interior of the country the winters are long and cold and the ground is frozen to a great depth. The summers are short but very warm because the days are from twenty to twenty-four hours in length. In the far northern part the sun shines continuously for several weeks.

When the surface soil thaws during the summer, vegetation springs up as if by magic, grass grows rapidly, and some crops can be raised. Grass and bushes grow everywhere, but no trees are found here.

Alaska's wealth in minerals, fisheries, and forests. The mountains of Alaska are rich in minerals, especially gold, copper, and silver. Gold is still secured in great quantities from the gravels of river beaches and along streams. Coal is abundant and widely distributed, but the fields are little worked. Silver is mined in paying quantities, and copper is so plentiful that its value as an export now surpasses that of gold (Fig. 246). The Arctic Plain is known to have rich stores of oil which some day may be developed and prove of great value to our country and the world.

The bays and rivers of southern Alaska are full of salmon, and salmon fishing and canning are important occupations (Fig. 245), for more salmon are caught and canned in Alaska than in Washington, the leading state in this industry. In the Pribilof Islands fur seals are caught, but their value is only a small percentage of that of the salmon catch.

The forests of the Coast Mountains each year furnish abundant lumber for local use. The streams of these mountains provide an inexhaustible supply of water power that is furnishing electricity for factories and for lighting during the long winter nights.

The possibilities of grazing and agriculture. Fairbanks is situated in a rich valley of the interior. Agriculture is the chief industry and on the near-by farms wheat, oats, barley, hay, potatoes, and other vegetables are grown successfully during the short, hot summer (Fig. 247). But the area that can be farmed to advantage could be greatly extended. In the island valleys and along the southern coast grazing as an industry is increasing. There is much rich pasture here, and hay is easily secured or raised for winter feeding.

Reindeer thrive on the pastures of the central plateau, and larger and larger herds are being cared for mostly by the Alaskan natives. The natives depend upon the reindeer for clothing, food, transportation, and

From U. S. Geological Survey

FIG. 247. **A field of grain near Fairbanks, Alaska.** Here in the Tanana River valley agriculture is successfully carried on under the direction of a United States Experiment Station (Fig. 243). The farms in this region are small.

Can you explain why it is possible to grow certain temperate-climate grains and vegetables so far north? If there were a good automobile road, about how long do you think it would take to drive from Fairbanks to the Arctic Circle?

What well-known river crosses the Arctic Circle? (See map, Fig. 243.)

shelter. Since it is estimated that the pastures of this region can support several million reindeer, they may some day prove to be an important source of meat for people in the United States.

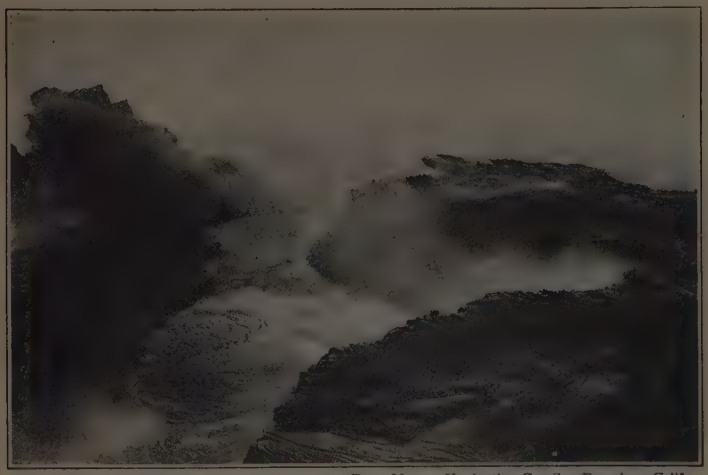
In southern Alaska fur farming, or the raising of fur-bearing animals, especially of foxes, is a growing and successful industry.

The difficulties met in the development of Alaska. At present Alaska is handicapped by the difficulties of transportation. The Yukon and its tributaries which drain the rich interior are navigable only a short time in summer. A railroad with several short branches to mining centers has been built from Seward on the coast to Fairbanks. The harbors of southern Alaska are open the year round, but more railroads are needed to carry products to these ports, especially when the rivers are icebound.

People of Alaska and places of interest. The entire population of Alaska is about equal to that of Augusta, Ga., and is less than that of any state in the Union. About one-half of the people are Indians and Eskimos. The United States government maintains excellent schools both for the white people and for the natives. In many ways through its various departments it is constantly trying to help the people. It introduced reindeer and is helping the natives to care for great herds. Surveyors are constantly busy exploring Alaska to find out the extent and the value of its resources and to suggest means of developing the country. The government also aids in maintaining the fisheries as well as in the development of farming.

Each year Alaska is visited by thousands of tourists who are attracted by the magnificent scenery and many other interesting features. The scenic route from Puget Sound to Alaska winds through the straits and channels separating the islands along the coast. High above the sea tower the great snow-capped ranges of the Coast Mountains. The native Indian villages are interesting and some of the older towns like Sitka are especially attractive. McKinley National Park in the greater highland region affords visitors much magnificent scenery.

No large cities are found in Alaska, but there are many towns which are thriving centers of trade. Juneau, the center of the gold-mining industry, is also the capital and chief city. Seward, situated at the end of the railroad, is a port of increasing importance. Fairbanks, in the center of the rich agricultural Yukon area, is a rival of Dawson, the Canadian center of the Yukon Valley. Nome, on Bering Sea, was at one time world famous because when gold was discovered



From Matson Navigation Co., San Francisco, Calif.

FIG. 248. **A daylight view of the Kilauea Crater.** The great volcano of Kilauea on the island of Hawaii has been inactive since 1924. But its great oval crater, nine miles in circumference, is a lake of red-hot boiling lava. This lake lies 1,000 feet below the mouth of the crater.

The glowing, liquid lava moves constantly and at night with its small fountains of red fire is a sight never to be forgotten. It lies on the eastern slope of Mauna Loa, ten miles from the sea and 4,000 feet above sea level.

What other volcanoes can you name? Tell where they are located.

in the surrounding beach gravels and sands it became the center of the gold rush.

From Point Barrow, the northern tip of Alaska, various polar expeditions have ventured out into the Arctic Ocean. Teller on the west coast suddenly became known to the world when Amundsen's dirigible landed there after its successful flight over the North Pole.

Alaska as yet is little known to the people of our country. But because of the richness of its varied resources it is one of the most valuable of our territories and cannot fail to increase in importance as these resources are properly developed.

91. HAWAII: OUR MID-PACIFIC POSSESSION

THE LESSON FORECAST

1. Why these islands are called the "Crossroads of the Pacific."
2. How the islands were formed.
3. Reasons for the agricultural importance of these islands.
4. The Hawaiian people and the city of Honolulu.

Location of the Hawaiian Islands. The Hawaiian Islands lie about one-third of the way from the United States to Australia. Because of their location they are often called the "Crossroads of the Pacific." They became a United States possession in 1898.

The surface and climatic features. The islands of this group are really the tops of high peaks which have been built up from the floor of the ocean by outflows of volcanic lava. On Hawaii are Mauna Kea and Mauna Loa, two of the best-known peaks, each one more than 13,500 feet high. Here, too, is Kilauea, the largest volcano in the world. Its crater is a great lake of liquid lava, many acres in extent, which from time to time fills and overflows. This fiery lake with its burning gases is an awe-inspiring sight and one of the chief attractions of the islands (Fig. 248). Under the influence of the climate the volcanic rock of these islands weathers rapidly into fertile and productive soil.

The Hawaiian Islands have a mild climate with dry summers and wet winters. For most of the year the steady trade winds, coming across miles of cool ocean, blow over these islands and keep them from being extremely hot, although they are as near the Equator as is Cuba. Because of the warmth and moisture (Fig. 244), the islands, except on the leeward sides, are covered with a

luxuriant tropical vegetation, and all hot-country crops can be raised easily.

The products and commerce of Hawaii. Sugar cane is far and away the leading crop of the islands, while the growing of pineapples ranks second. Almost all of the raw sugar is sent to refineries on the Pacific coast of the United States. Pineapples worth several million dollars are canned and exported annually (Fig. 249).

In exchange for these and other tropical products we send to Hawaii flour, meat, textiles, machinery, and various other goods not produced in the islands.

The people of Hawaii. The total area of the eight Hawaiian Islands is a little more than two-thirds that of Vermont, and the population of the two areas is in about the same proportion. Because these islands can be reached so easily from the East and the West, they contain people of many races. The native Hawaiians are a brown-skinned race and are noted for their love of music. Since the coming of the white man the natives have decreased in numbers, until today a little over two-fifths of the people are Japanese and only about one-fifteenth native Hawaiian.

Hawaii has one important city, Honolulu on the island of Oahu. This is a beautiful modern city with a fine harbor (Fig. 243). Its population is about one-sixth of that of Washington, D. C. Only a few miles away is situated the fortified naval station of Pearl Harbor. Here our government has constructed a dry dock where the largest ships can be repaired.

The attractions Hawaii offers travelers. Hawaii, with its rich tropical vegetation and natural scenic wonders, offers many attractions to tourists. People are especially interested in visiting the great active volcanoes. The climate is delightful, and bathing and other sports are enjoyed throughout the year. Six round-the-world cruises touch at Hawaii. Landing places for airplanes are now being constructed on each one of the principal islands.

From Matson Navigation Co., San Francisco, Calif.

FIG. 249. **Canning pineapples in Honolulu.** From June to September the employees of the pineapple canneries here work at full speed. The largest cannery can turn out 1,000,000 cans a day. Among the employees are found Hawaiians, Portuguese, Chinese, Japanese, and Filipinos. Where in the United States are pineapples grown?

92. THE PHILIPPINES AND OTHER PACIFIC POSSESSIONS

THE LESSON FORECAST

1. The number of the Philippine Islands and how we obtained possession of them.
2. Why the climate is always warm.
3. The maintenance and surplus crops.
4. The character of the people.
5. Three serious problems facing the people of these islands.
6. Why our other Pacific possessions are important.

The extent and position of the Philippines. The Philippines, a group of more than three thousand islands which lie southeast of Asia, came into the possession of the United States in 1898 as a result of the Spanish-American War. Their total area is a little more than that of Arizona, two-thirds of this area being included in the islands of Mindanao and Luzon (Figs. 243 and 461). These islands, extending nearly a thousand miles through fifteen degrees of latitude, reach to within six degrees of the Equator. The distance from

From Bureau of Insular Affairs, U. S. War Department

FIG. 250. **Sorting Manila hemp in the Philippines.** This hemp is from a large banana-like plant known as abaca. The abaca fiber, or Manila hemp, before it can be baled for shipment, must be sorted according to quality in order to maintain the standard grades.

Visit a store in your community and secure a small piece of Manila rope. Separate the fibers of the rope and test them for strength. In what industries do you think Manila hemp may be used? Can you tell why our wheat farmers are much interested in this product of the far-away Philippine Islands? Do you know why we do not produce this fiber in our own country?

San Francisco to Manila by way of Honolulu is nearly seven thousand miles, almost one-third of the distance around the earth.

The surface and climatic features. The Philippines are mountainous and volcanic, with some peaks towering upward more than 10,000 feet. There are in the two larger islands some extensive lowlands, and here agriculture is best developed.

Because of the low latitude the climate is always warm. But the oceanic position of the islands prevents the weather from becoming exceedingly hot. The northeast trade winds bring most of the rain to the northern portion of the islands during our winter. In the southern portion the rainy season comes with the southwest winds during our summer season.

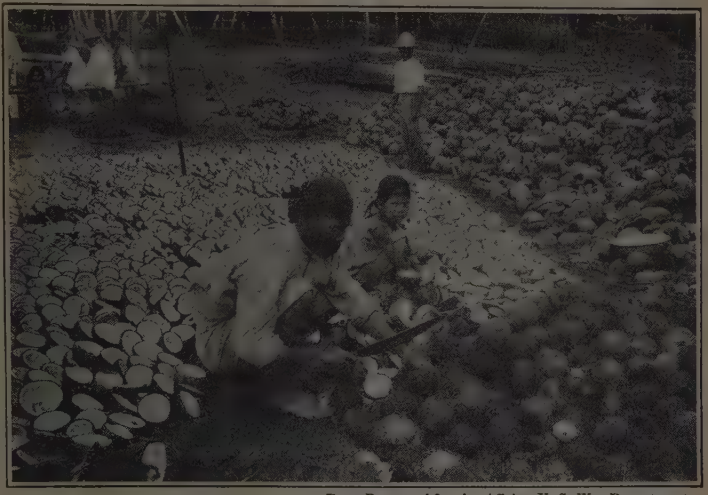
How the people make a living. The chief occupation of the Filipinos is agriculture, although only one-eighth of the land is under cultivation. Rice leads all other crops in production, yet not enough is produced to meet the needs of the people, and large quantities are imported from Asia. Other important crops are abaca, or Manila hemp (Fig. 250), coconuts, sugar cane, and corn. Bananas and sweet potatoes are grown extensively for home use. The chief surplus products are crude sugar, manila hemp, used in making rope and binder twine, copra (Fig. 251), and coconut oil, used largely as a substitute for butter and lard.

More than half the trade of the islands is carried on with the United States. Our chief articles of export to the Philippines are flour, meat, and manufactured goods, especially cotton goods and machinery.

More than two-thirds of the total area of the islands is covered with forests, nearly all of which belong to the government. These resources mean that in time lumbering may become a leading industry.

The carabao, or water buffalo, is the leading draft animal. Cattle, however, are also raised extensively.

The people and the cities. There are in the Philippines more than ten million people, mostly Filipinos. Eight different languages are spoken in different parts of the islands, but today about one-half of the people can speak English. Some of the tribes in the interior forests are still savage, but others are skillful farmers terracing the hillsides and growing rice and other crops. The Filipinos as a rule are intelligent and eager to learn.



From Bureau of Insular Affairs, U. S. War Department

FIG. 251. **Opening coconuts in the Philippines.** It takes a very sharp knife to open the hard husk of the coconut. After the coconut has been opened, the meat is left in the sun to dry. The dried meat, known as copra, is manufactured into various articles. Much coconut oil obtained from copra is used in manufacturing soaps.

Ask your grocer to show you other products he sells which are made from coconuts. Do you know in what section of our country coconuts can be grown? In what near-by islands are they an important product?

Manila, the capital and chief city of the Philippines, is on the island of Luzon. Manila, which is a little larger than Denver, has an excellent harbor on Manila Bay. The Pasig River divides the city into two sections. The old section, in which are found the government buildings, is surrounded by a protecting wall. Most of the business is carried on in the new section. The other cities of the Philippines are small, only three having a population of more than 60,000.

Problems of the people. One of the problems of the Filipinos is how to make better use of the land so that enough food may be produced to feed all the people. This is entirely possible, for the climate is favorable and the soil is rich.

Another problem is that of the development of manufacturing. The Philippines are rich in water power, coal, minerals, and a great many other raw materials, and the increasing population furnishes a steadily growing market for many articles which are now imported.

A third serious problem is that of preparing the people for self-government. At present the islands are under the guidance of the United States, and any laws that are made must be approved by the governor-general. Our government early established schools in all parts of the islands. The English language is being taught to all the children and they are being trained in trades and in habits of industry.

Our other Pacific possessions. About 1,500 miles east of Manila lies the small island of Guam with an area only one-fifth as great as that of Rhode Island. Its inhabitants number about sixty to the square mile and nearly all of them belong to the native race. Since Guam is a naval station, it is closed to commerce with any country except the United States. The crops grown are similar to those of the Philippines.

The United States owns several small islands in the Samoan group. They lie more than 1,500 miles south of Hawaii and are our only possession south of the Equator. The islands have a combined area a little greater than that of the District of Columbia, and are densely populated. The crops are mostly tropical fruits. The chief export is copra, the dried meat of the coconut (Fig. 251). The plantations are owned by Europeans or Americans. Pago Pago on Tutuila, the largest island of the group, is the best harbor in the South Sea Islands, and is a naval fueling station (Fig. 493).

93. THE CANAL ZONE

THE LESSON FORECAST

1. The Panama Canal as an interoceanic gateway.
2. Difficulties in the constructing of the canal.
3. What the canal means to trade.

What is meant by the Canal Zone and its location. The Canal Zone is a strip of land ten miles in width extending across the Isthmus of Panama (Fig. 243). Its total area is about one-fifth that of Rhode Island. Within the Canal Zone our government has constructed the Panama Canal which connects the Atlantic Ocean with the Pacific Ocean. This interoceanic gateway accommodates the largest ocean-going vessels and shortens the water route from the North Atlantic to the Pacific by thousands of miles.

The canal as an engineering feat. The Panama Canal proved to be the most difficult and the most expensive to construct of all the canals of the world. Even though its locks lift vessels only eighty-five feet above sea level, yet where the channel crosses the highest ridges it had to be excavated in places to a depth of over four hundred feet. It took ten long years of difficult work to build the canal and the locks, while the cost exceeded three hundred fifty million dollars.

Ridding the Canal Zone of diseases which killed thousands of people when the French tried to build the canal was almost as remarkable a feat as building the canal. By a rigid system of cleaning the streets and yards, and by clearing up such places as swamps where mosquitoes and other insects thrived, the Canal Zone has been made one of the most healthful places known.

Advantages of the Panama Canal. The Panama Canal is proving well worth the money it cost to build it. It has shortened the water route from New York to San Francisco about eight thousand miles and has made it possible to carry on trade more profitably between our Pacific and Atlantic coast ports. It also puts our Atlantic and Gulf coast ports into easy trading distance with the countries of the west coast of Central and South America.

While the United States receives the greatest benefit from the canal, many other countries also profit by it, for the canal is open to the vessels of all nations on the same terms as to our own merchant vessels. The canal also relieves us of the necessity of keeping a large navy in each of the great oceans, for now a fleet can be transferred easily and quickly from one coast to the other.

94. PORTO RICO AND THE VIRGIN ISLANDS

THE LESSON FORECAST

1. The extent of our island possessions in the Caribbean Sea.
2. The industries and towns of these islands.

Location, size, and population. Porto Rico and the Virgin Islands lie on the northern border of the Caribbean Sea about 1,500 miles southeast of New York City and about the same distance north of the Equator.

Porto Rico (Fig. 243) with an area of 3,435 square miles, is a little over two-thirds as large as Connecticut. A little more than two-thirds of the people are white. The area of the Virgin Islands is about twice that of the District of Columbia. These islands were bought from Denmark for $25,000,000.

Why these islands are valuable. Most of the islands are swept by the northeast trade winds which bring to Porto Rico sufficient moisture for the growing of tropical crops. The chief products of Porto Rico are sugar, coffee, tobacco, and fruits (Figs. 252 and 253). Porto Rico, which came into our possession during the Spanish-American War, has proved a profitable territory. From Porto Rico we receive quantities of raw sugar, tobacco, and some tropical fruits.

The Virgin Islands are valuable chiefly because of the harbor of St. Thomas which has been made a naval base and coaling

Publishers Photo Service

FIG. 252. **Under a tobacco tent in Porto Rico.** An idea of the size of the tobacco plants seen in the picture may be gained by comparing their height with that of the worker standing among them. What do such large, thrifty plants tell us about the soil conditions in Porto Rico?

The use of cheesecloth sheds to protect the tobacco plants growing in the field gives the leaves a superior flavor. Porto Rico tobacco is highly valued for cigar wrappers. Can you tell where much of the tobacco raised in Porto Rico and Cuba is sent to be manufactured? Name the great tobacco-raising regions of our own country.

station. As in the past the chief export of these islands is bay rum.

Industries and cities of the islands. The density of population in Porto Rico exceeds that of Connecticut, one of our leading manufacturing states. There are few large towns in Porto Rico, for the chief industry is agriculture. Sugar and tobacco are grown extensively and are shipped largely to this country, as is also grapefruit. Corn, beans and other vegetables, and fruit are grown for local use. But flour and rice are imported from the United States in large quantities.

There are no very large cities anywhere in our Caribbean lands. San Juan on the north coast of Porto Rico contains about one-fourth as many people as Denver, and Ponce on the south coast is a little over half as large as San Juan. The island, however, is completely dotted with small villages. Because of the rugged character of the country, no railroads cross the island. There is a coast-line railway running along the north, west, and south shores, and a splendid system of good roads connects all the towns of the island.

Publishers Photo Service

FIG. 253. **A sugar mill in Porto Rico.** Methods of harvesting sugar cane are much the same in Porto Rico as in our country (Fig. 156). Why is Porto Rico better suited for growing sugar cane than Louisiana or Texas? (Sec. 94.) Why is the raw sugar shipped to the United States to be refined?

SOME RELATED PROBLEMS

1. Why is Alaska's southern coast much warmer than the interior and the northern coast?
2. Why is the live-stock industry becoming more and more important in Alaska?
3. How do the Virgin Islands serve as a protection to the Panama Canal?
4. What special manufactures might profitably be undertaken in the Philippines?
5. How would the growing of more rice and corn help the people of the Philippines?

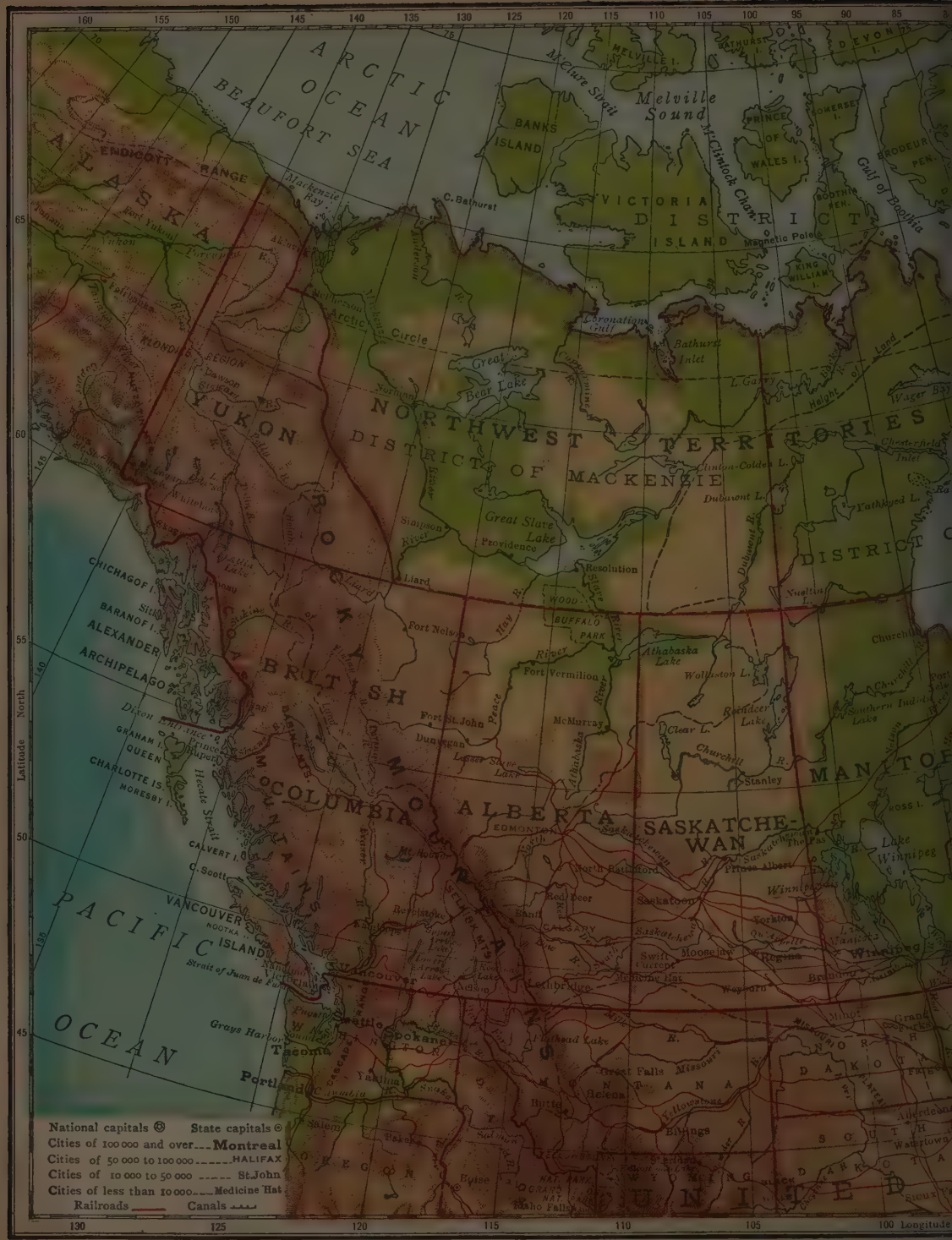
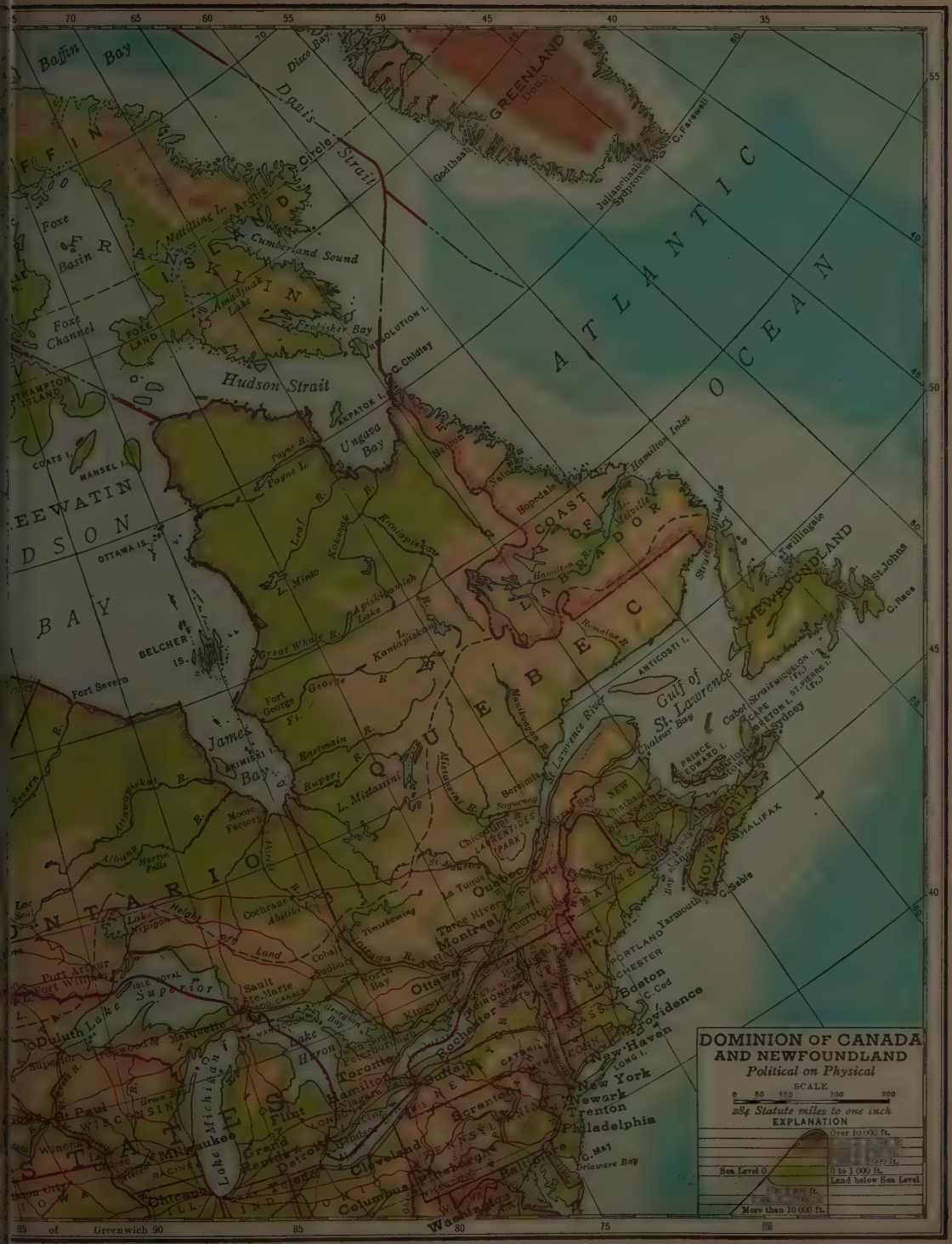


FIG. 254. A Map of the Dominion


DOMINION OF CANADA
AND NEWFOUNDLAND
Political on Physical
SCALE
0 50 100 200 300
284 Statute miles to one inch
EXPLANATION
Over 10 000 ft.
1 000 to 10 000 ft.
0 to 1 000 ft.
Sea Level 0
Land below Sea Level
More than 10 000 ft.
Baffin Bay
Davis Strait
Hudson Strait
Foxe Basin
Foxe Channel
Cumberland Sound
Frobisher Bay
Disco Bay
GREENLAND
Godthaab
C. Farewell
Julianehaab
Sydprong
ATLANTIC OCEAN
Gulf of St. Lawrence
Cabot Strait
ANTICOSTI I.
MIQUELON I. (Fr.)
CAPE BRETON I.
ST. PIERRE I. (Fr.)
Sydney
PRINCE EDWARD I.
Charlottetown
NOVA SCOTIA
HALIFAX
C. Sable
NEWFOUNDLAND
St. Johns
C. Race
Twillingate
COAST OF LABRADOR
Hopedale
Hamilton Inlet
Nain
Hebron
Port Burwell
SOLUTION I.
C. Chidley
AKPATOK I.
Ungava Bay
Payne R.
Payne L.
COATS I.
MARSEL I.
OTTAWA IS.
BELCHER IS.
Fort Severn
James Bay
Moose Factory
Albany
Martin Falls
Attawapiskat R.
Severn R.
Winisk I.
Fort George
Eastmain R.
Rupert R.
L. Mistassini
Great Whale R.
L. Kaniapiskau
L. Mirabo
Koksoak R.
Kaniapiskau R.
Romaine R.
Natsilling L.
Amadjuak Lake
Foxe Land
Arctic Circle
Lac Seul
Lake Nipigon
Port Arthur
Fort William
Sault Ste. Marie
Soo Canals
Lake Superior
Isle Royal
Duluth
Lake Michigan
Lake Huron
Georgian Bay
Lake Erie
Lake Ontario
Toronto
Hamilton
Buffalo
Rochester
Kingston
Ottawa
North Bay
Sudbury
Cobalt
Timiskaming
Abitibi
Cochrane
Three Rivers
Montreal
Quebec
Lake St. John
Chicoutimi R.
Saguenay
St. Maurice R.
Montmorency R.
St. Lawrence River
Chaleur Bay
Bathurst
Dalhousie
Campbellton
Gaspe
Grand Falls
Woodstock
Fredericton
St. John
Digby
Yarmouth
PORTLAND
MANCHESTER
Boston
C. Cod
Providence
New Haven
LONG I.
New York
Newark
Trenton
Philadelphia
C. May
Delaware Bay
Pittsburgh
Scranton
Cleveland
Detroit
Flint
Grand Rapids
Milwaukee
Chicago
Gary
Indianapolis
Columbus
Dayton
Cincinnati
Washington
Baltimore
Wheeling
Parkersburg
Charleston
Lexington
Louisville
Evansville
Springfield
Peoria
Rock Island
Davenport
Dubuque
Minneapolis
St. Paul
Duluth
Superior
Green Bay
Milwaukee
Madison
Racine
Kenosha
Waukegan
Chicago
Gary
Michigan City
Elkhart
South Bend
Fort Wayne
Toledo
Sandusky
Cleveland
Akron
Youngstown
Erie
Buffalo
Rochester
Syracuse
Utica
Albany
Troy
Schenectady
Binghamton
Elmira
Corning
Hornellsville
Olean
Jamestown
Erie
Meadville
Oil City
Franklin
Titusville
Warren
Bradford
Kane
Ridgway
DuBois
Clearfield
Altoona
Johnstown
Harrisburg
Lancaster
Reading
Allentown
Bethlehem
Easton
Scranton
Wilkes-Barre
Hazleton
Pottsville
Shamokin
Sunbury
Lewisburg
Williamsport
Lock Haven
Bellefonte
State College
Tyrone
Huntingdon
Chambersburg
Gettysburg
York
Lancaster
Harrisburg
Carlisle
Mechanicsburg
Shippensburg
Waynesboro
Hagerstown
Frederick
Cumberland
Keyser
Martinsburg
Winchester
Front Royal
Luray
Harrisonburg
Staunton
Lexington
Buena Vista
Covington
Clifton Forge
Alleghany
Iron Gate
Low Moor
Clifton
Hinton
Ronceverte
Lewisburg
White Sulphur Springs
Alderson
Hinton
Princeton
Bluefield
Pocahontas
Welch
Williamson
Logan
Huntington
Ashland
Ironton
Portsmouth
Chillicothe
Circleville
Lancaster
Zanesville
Cambridge
Cadiz
Steubenville
Wheeling
Parkersburg
Point Pleasant
Charleston
Gauley Bridge
Fayetteville
Montgomery
Oak Hill
Beckley
Mount Hope
Fayetteville
Summersville
Richwood
Marlinton
Elkins
Buckhannon
Clarksburg
Fairmont
Morgantown
Uniontown
Connellsville
Greensburg
Latrobe
Johnstown
Altoona
Bedford
Everett
McConnellsburg

THE COUNTRIES OF NORTHERN NORTH AMERICA

95. WHAT THE MAPS, TABLES, AND GRAPHS SHOW

1. Why are the Canadian waterways used but little for transportation? (*a*) Study the map of Canada (Fig. 254) or a globe. What is the shortest water route by which to ship wheat from Manitoba to Europe? (*b*) Name the bodies of water through which this route leads. (*c*) What is the highest latitude reached by this route? (*d*) Do you think this route could be used by steamships the whole year round? Give your reasons. (*e*) How much longer is the Great Lakes–St. Lawrence water route than the northern route? (*f*) Do you think it would be possible for ocean-going vessels to use this route? (*g*) What are some of the chief handicaps of this route?
2. Why is the population so unevenly distributed over Canada? (Figs. 5, 81, and 82.) (*a*) What section of Canada was first settled? (*b*) Where do we find most of the cities and the people? (*c*) Why is the western part of Canada so thinly populated? (*d*) Why has the northern section only a sparse population? (Figs. 81, 82, and 255.) (*e*) Why are there few people in the area just east of the Rocky Mountains? (Figs. 78, 81, and 82.) (*f*) What advantages does southeastern Canada offer?
3. Why do most of the railroads of Canada run east and west?
4. Why are there so many lakes throughout Canada?
5. Why would you expect that there would be little trade in agricultural products between the northern part of the United States and the southern part of Canada?

96. THE DOMINION OF CANADA

THE LESSON FORECAST

1. Similarities in surface and climate to those of the United States.
2. Why the west coast of Canada has a mild climate.
3. Contrasts between the climate of the east coast and the west coast.
4. How winter interferes with transportation in Canada.
5. Reasons for the success of agriculture in high latitudes.
6. The great Canadian gateway to the interior of the continent.
7. The highland areas of the east a continuation of the great Appalachian Highland in Canada.
8. The importance of the Great Lakes–St. Lawrence waterway.
9. Why there are few cities on the west coast of Canada.

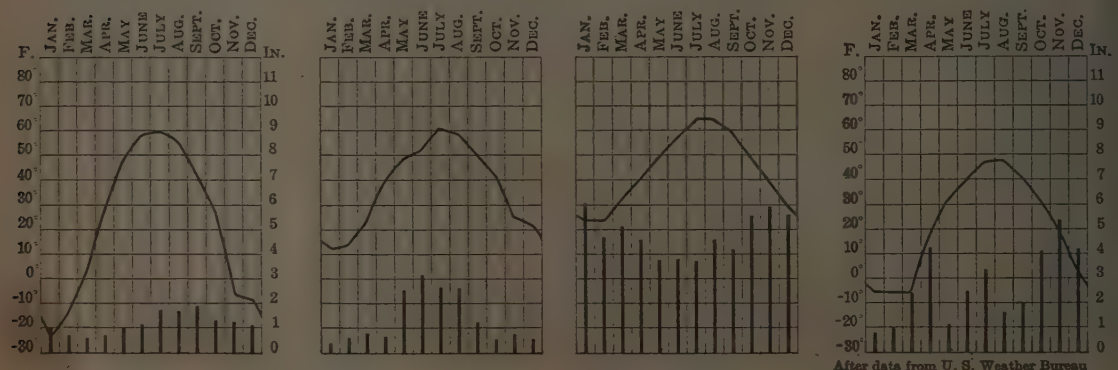

F.
IN.
JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT. OCT. NOV. DEC.
80° 70° 60° 50° 40° 30° 20° 10° 0° -10° -20° -30°
11 10 9 8 7 6 5 4 3 2 1 0
Dawson, Yukon
Alt. 1,200 ft. Temp. 24.2°
Rainfall 14.0 in.
Calgary, Alberta
Alt. 3,389 ft. Temp. 37.4°
Rainfall 16.2 in.
Halifax, Nova Scotia
Alt. 88 ft. Temp. 44.3°
Rainfall 57.3 in.
Hebron, Labrador
Alt. 49 ft. Temp. 23.0°
Rainfall 33.0 in.
After data from U. S. Weather Bureau

FIG. 255. Average annual temperature and rainfall for four cities of Canada and Newfoundland

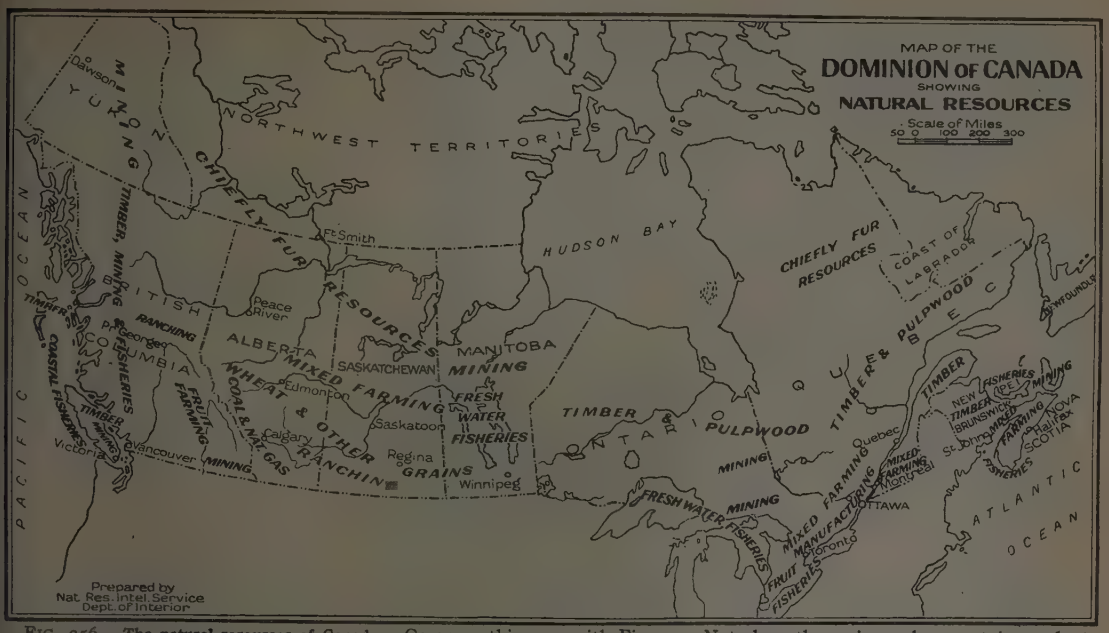


FIG. 256. **The natural resources of Canada.** Compare this map with Fig. 94. Note how the regions where certain products are found in the United States continue across the border into Canada. What agricultural regions lie partly in each country? what regions of natural resources? Can you explain why the forest resources of southeastern Canada are used largely to produce wood pulp? Study the map and name the natural resources of southern Canada: of northern Canada.

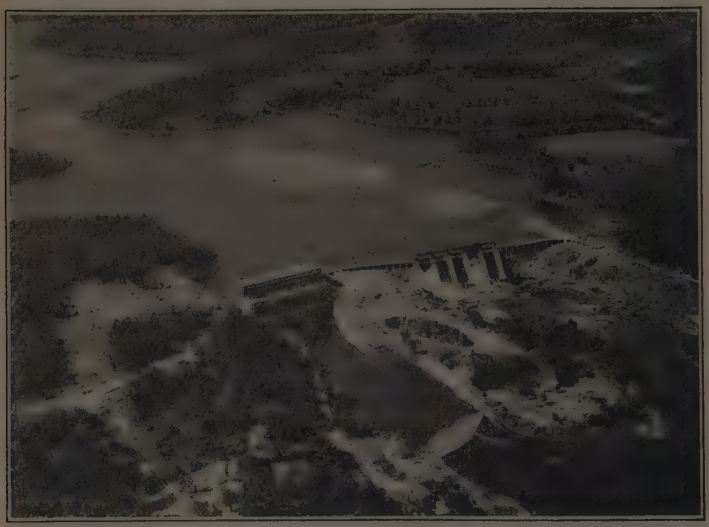
Why Canada is growing so rapidly. Just north of the United States lies Canada, the other great country of America to be developed by English-speaking people (Fig. 254). The Dominion of Canada, one of the self-governing countries of the British Empire, has a government similar in many ways to ours. The Dominion is divided into sections called provinces that are almost as well known to us by name as our own states.

The story of the settlement and development of Canada is in many ways similar to that of the United States. The eastern sections were developed first, then the midwest and Pacific coast regions, and last of all the wheat and grazing country east of the Rockies. A little larger in area than the United States, Canada is rich in resources of soil, minerals, forests, water power, and sea (Figs. 256 and 257). The population, however, is only about one-twelfth that of the United States, for much of Canada lies too far north to be habitable. More than half the population is found in the provinces of Quebec and Ontario. But the western provinces are being settled rapidly, just as were our western states after the introduction of grazing and farming.

Similarities between the United States and Canada. The surface and climatic features of the two countries are much alike except in the colder northern provinces. Many parts of Ontario and Quebec lie in the same latitude as New England and New York state and grow similar crops, while conditions are equally favorable for industry.

The western coast, because of its location and because the high mountain wall protects it from the cold winds of the interior, has a moist climate like that of Washington and Oregon. The summers are not hot, and the harbors are not frozen during the winter. This moist region, especially on the highlands, is densely forested.

Greatly in contrast is the east coast, which, although it is moist and has a fine



Royal Canadian Air Force

FIG. 257. **An airplane view of a hydroelectric plant in Quebec.** Of the provinces of Canada, Quebec and Ontario lead in the development of water power. Do you think the fact that there is no coal in these provinces has anything to do with this development?

The plant seen in the picture is one of three great hydroelectric plants on the Gatineau River (Fig. 254). This river, a tributary of the Ottawa, flows through a rugged region. The fall in its course furnishes a tremendous amount of power. For what purposes, besides running a pulp and paper mill, do you think this power may be used?

summer climate, is extremely cold in winter. Here most of the harbors are icebound, even the great waterway of the St. Lawrence being frozen several months of the year. This is a serious handicap to the development of trade, especially that carried on between Canada and Europe.

The central plain has a cooler climate than that in the plains area of the United States. In the grain-growing section the summers are warm, with a small rainfall, while the winters are dry and bitterly cold. Toward the eastern part of the country the climate becomes more moist, and because the summer days are long with much sunshine many different crops can be grown successfully.

The highland areas of the eastern provinces are a continuation of the Appalachian Highland. Here, as in the United States, it separates the eastern shore settlements from the interior regions in which are found the greater number of people. Between this highland and the cold, bleak Labrador Plateau to the north lies the St. Lawrence Valley, the great gateway to Canada. Through this valley passed the early French explorers who reached the upper Great Lakes and then journeyed by land and river to the Mississippi. A part of the St. Lawrence Valley lies in the Great Valley just as do many of the river valleys in the eastern part of our country. But the upper part of the St. Lawrence Valley lies in the Great Plain as do the Mississippi and Ohio valleys in the United States (Fig. 78).

Canada and the United States share in the use of the St. Lawrence and the Great Lakes, which together form the greatest interior waterway in the world. This waterway is an export route from the Great Plains of the far West for both Canada and the United States.

The western highland of Canada occupies the area between the Great Plains and the Pacific Ocean and is a region of great scenic beauty with its many high mountain peaks, its glaciers, and its lakes. The extreme western ridges have been partly drowned by the sea and appear as islands and promontories. The coast line is therefore irregular with many fine harbors. But here as yet no large ports have grown up except at the terminals of those railroads which cross the mountains from the east, as at Vancouver and Prince Rupert.

97. THE PROVINCES OF CANADA

THE LESSON FORECAST

1. Why fishing is an important occupation in the maritime region.
2. Why the southern part of the Central Provinces is more densely peopled than the northern part.
3. The location of the largest cities of Canada.
4. Why agriculture and grazing are important in the Great Plains Provinces.
5. The chief source of wealth in the Pacific Province.
6. Resources of the Northern Territories.

The Maritime Provinces. Canada, according to the occupations of its people, is naturally divided into four areas. In the east are the Maritime Provinces, Nova Scotia, New Brunswick, and Prince Edward Island, where farming, fishing, lumbering, and mining are the chief occupations (Figs. 256, 258, and 259).

Courtesy Canadian National Railways

FIG. 258. **Haying in Nova Scotia.** his is a farming scene a few miles est of Halifax (Fig. 254). Nova otia lies in the northern Appa-chian region, and in many ways surface resembles that of New ngland. Here mixed farming is e most successful form of agri-lture. Can you tell what is meant mixed farming? Note the ox team. In many sec-ons of the Maritime Provinces en are used for farm work. Look the word maritime in your ctionary.

FIG. 259. **Blossom time in a Nova Scotia apple orchard.** While pears, peaches, and cherries are grown in Nova Scotia, ples are the chief fruit raised for export. Most of the apple orchards lie in Annapolis Valley near the southern shore of the y of Fundy (Fig. 254). Here they are well sheltered and protected from severe winter weather. Why do you think this ion near the ocean is a favorable one for fruit raising?

Courtesy Canadian National Railways

FIG. 260. **Canoeing on Miramichi River, New Brunswick.** The rugged wooded hills and the many clear small lakes and swift rivers of the province are much like those of New England (see sec. 52).

The beautiful Miramichi is one of the larger rivers in this province. It winds through a heavily forested region where the hunter and angler can find much sport. During the high waters of spring and autumn barges and small steamers can go far up the river. By what means then could the more remote regions along the shallow upper course of the stream be reached?

Because Prince Edward Island and Nova Scotia are near the great fishing grounds or Grand Bank near Newfoundland, fishing is the leading occupation in these two provinces. In Nova Scotia there is a rich agricultural area devoted to dairying and the growing of apples (Fig. 259). Here also are valuable coal mines which are being developed extensively, coal being an important export.

New Brunswick, owing to its elevation and its climate, is largely a lumbering and hunting region (Fig. 260). On Prince Edward Island the raising of foxes for their furs has become such a paying industry that in 1923 the value of the pelts and the live foxes marketed was estimated at $3,000,000.

The Central Provinces. From Ontario westward most of the people live in the southern part of the country, for the cold forested areas of the Northwest Territories are not favorable for settlement. Of these provinces, Quebec and Ontario are by far the best located for agriculture, manufactures, and commerce. Their climate and soil are favorable for dairying and for growing cereals, potatoes, and fruits. Southern Ontario, because of the advantages of its location and the ease with which fine crops are grown there, is often called the "Garden of Canada."

In these provinces are to be found the largest cities and the greatest development of manufacturing and commerce. Montreal can be reached by ocean-going vessels and is a busy port except when the St. Lawrence is frozen over. Exports can be brought down the Great Lakes, through the Welland Canal connecting Lake Erie and Lake Ontario (Fig. 85), and then down the St. Lawrence to Montreal for reshipment abroad.

Ontario is rich in copper and nickel, both much used minerals, and is therefore an important mining center. Through Ontario and Quebec pass large quantities of lumber from the northern forests (Fig. 261). Although much of this is used at home, lumber and wood pulp are valuable exports.

The Great Plains Provinces. The Great Plains Provinces or the provinces of the interior are Manitoba, Saskatchewan, and Alberta, all famous as grain-growing areas (Figs. 67 and 262). Spring wheat is raised so extensively here that today Canada is the second greatest wheat-growing country of the world. Other crops grown here, as in the states of our country lying just to the south, are oats, barley, rye, and flax.

Royal Canadian Air Force

FIG. 261. **An airplane view in western Ontario.** The sawmill to be seen here is near Kenora (Fig. 254). Notice the logs in the water along the shore and the piles of sawed lumber at the right of the mill. Upon what body of water is this sawmill located? (Fig. 254.) Is it built on an island or a peninsula?

Much of the lumber produced at this mill is shipped east. Do you know the reason why? By what route do you think it is shipped? What near-by states in our country still produce much lumber? Do you think this would be a favorable place to operate a wood-pulp mill? Why?

Courtesy Canadian National Railways

FIG. 262. **A great wheat field in western Canada.** Throughout the wheat region the landscape in all the provinces is much the same. What do the farm buildings to be seen in the distance tell you about the success of agriculture in this part of Canada?

Do you think less rainfall is required for grain growing in this region than in Kansas (Fig. 103)?

West of the wheat belt, as in our country, is located the grazing region. Some fruit is also grown here. In Alberta great numbers of cattle and sheep are raised. In recent years many new settlers, some of them from our country, have entered these provinces, and consequently the Great Plains area of Canada is becoming well occupied and is being rapidly developed.

The Pacific Province. British Columbia, with its high mountains, its magnificent scenery, and rugged coast line, is the scenic province of Canada. The mineral deposits here, especially those of gold, silver, copper, and coal, are being worked more and more. In certain favored sections fruit growing is becoming important. But its great wealth lies in the forests and the fisheries (Fig. 256). As in Alaska on one side and Washington on the other, salmon are caught and canned in large quantities. Lumbering and the canning of fish are therefore the leading industries in this province.

The Northern Territories. Arctic Canada, as this section is sometimes called, is a vast area sparsely peopled by hunters, Indians, and Eskimos. North of the forests is the great tundra area where the only vegetation is moss, although toward the south grass springs up during the short summer. Here is the possible feeding ground for herds of reindeer and musk oxen which may some day be a valuable source of meat to the people of Canada and the United States.

The most important region of the Northern Territories is the Yukon Territory,

Courtesy Dominion Atlantic Ry.

FIG. 263. **The harbor at Halifax, Nova Scotia.** The harbor seen in this picture is one of the finest in the world. During the winter months it is free from ice, and then Halifax becomes the chief seaport of Canada.

Note the railroad tracks extending out on the wharves. Halifax is the ocean terminus of the Canadian government railways. Crossing the Atlantic from this city to Great Britain, an ocean trip is one day shorter than the trip from New York City. Can you explain why Halifax with all these advantages does not rival New York City as a shipping and commercial center?

widely known for the Klondike gold field. Yukon, like the neighboring region in Alaska, will support some agriculture, but it is still mainly a mining region. Dawson, the chief settlement, is connected by rail and water with Skagway, a port of Alaska (Fig. 254).

98. TRANSPORTATION, CITIES, AND PROBLEMS OF CANADA

THE LESSON FORECAST

1. The chief transportation routes in Canada.
2. Some possible solutions of the difficulties of transportation in winter.
3. Why Canada trades extensively with the United States.
4. Why St. John and Halifax are thriving cities.
5. The advantages in location of the chief cities of the Central Provinces.
6. The location and advantages of the Pacific coast cities.

Routes of trade and communication. The provinces of Canada are joined by a number of railroads. These, with the Great Lakes–St. Lawrence route, make it possible to carry on trade between Europe and the Maritime Provinces, and the great food- and lumber-producing areas to the west.

Because the St. Lawrence is frozen over during winter, the people of Canada are especially interested in securing an all-year-round route to the Atlantic. It has even been proposed to build a canal from Lake Winnipeg to Hudson Bay. The use of specially constructed steamers for ice breakers would make it possible to ship wheat to Europe all the year round over this short route.

But the trade routes to the United States are always open, and it is natural, therefore, that our country should lead in commerce with Canada. For Canada imports manufactured goods, especially textiles and steel, and we import lumber and paper pulp. This trade is of great advantage to both countries.

The leading Canadian cities. In the Maritime Provinces the leading cities are Halifax (Figs. 254 and 263) and St. John. The former, situated on the finest harbor in Nova Scotia, is the leading British naval and fueling station in America. St. John, the largest city in New Brunswick, has a fine location upon the Bay of Fundy. Neither of these harbors is frozen during the winter.

The two largest cities of the Central Provinces are Montreal and Toronto, the former a little larger and the latter a little smaller than Los Angeles. Montreal, which

is situated at the head of navigation for ocean-going vessels, is the chief commercial city of Canada (Fig. 264). It is a leading railroad center of the country and the lower terminus of the Great Lakes steamship lines (Figs. 53 and 73).

Toronto, on the northwest shore of Lake Ontario, is the educational center of Canada and as a railway center is second only to Montreal. Ottawa, the capital of Canada, is the center of a great lumber industry and has the largest sawmills in the British Empire. Fort William and Port Arthur, situated on the north shore of Lake Superior, are outlets for the wheat of the Prairie Provinces. Quebec, with its citadel crowning the precipitous north shore of the St. Lawrence, is a historic city, one of the most picturesque in America.

Winnipeg, lying at the junction of two navigable rivers, is the chief city of the Great Plains Provinces. Here railroads converge from all directions, and for this reason Winnipeg has become the leading grain center and the distributing point of supplies for all of the Canadian Northwest. Other cities of importance in this region are Regina in Saskatchewan, and Calgary and Edmonton in Alberta, both important railway and trade centers.

Vancouver, the largest Canadian city on the Pacific coast, is the western terminus of an important transcontinental railway. It has a fine harbor (Fig. 265) and is the eastern terminus of several steamship lines which ply between Canada and the Orient. Prince Rupert is the western terminus of the most northerly railway route and is therefore a shipping point for much of the grain and cattle products of British Columbia and Alberta. Victoria, the capital of British Columbia, is an attractive residential city at the south end of Vancouver Island (Fig 254). Dawson, on the Yukon River, was founded during the rush for gold to the Klondike in 1896. Once a flourishing town, the receiving and distributing point for the region, it has declined greatly in population (Fig. 254).

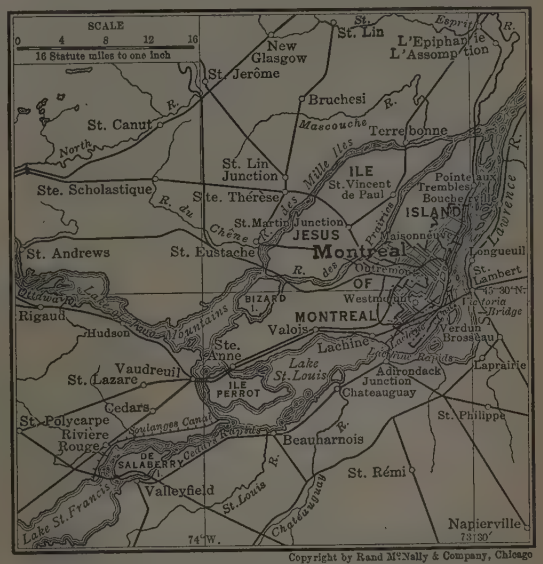


FIG. 264. **Montreal and the surrounding region.** Notice the location of the city on an island. Learn what rapids make Montreal the head of navigation for ocean-going vessels. Why may Montreal be considered a gateway city? What are the advantages of its location for trade and commerce?

FIG. 265. **Vancouver, British Columbia, and surrounding region.** Vancouver's chief harbor front is on Burrard Inlet, extending twenty miles into the interior. What large island helps protect its channel? (Fig. 254.) What advantages in location has Vancouver over the city of Victoria? (Fig. 254.)

Problems facing the people of Canada. Canada is a large country, rich in natural resources but with a small population. What can be done to induce more people with capital to come in and help develop the country? In the streams of eastern Canada there is unlimited power (Fig. 257). How can manufacturing enterprises be best developed to make use of this power?

Throughout Canada there are vast areas of valuable forests. How can these forests be best used? The great tundras north of the forest area offer fine pasture for reindeer and musk oxen. How can people be induced to take up the occupation of grazing here?

The wild life in the forests, especially the fur-bearing animals, is a source of much revenue. What can be done to conserve this wealth? Every winter Canada is handicapped by the closing of the streams, the chief highways for trade. What can be done to improve the all-year-round transportation facilities? These are some of the problems being considered by the people of Canada.

99. NEWFOUNDLAND, LABRADOR, MIQUELON, AND GREENLAND

THE LESSON FORECAST

1. Of what empire Newfoundland and Labrador form a part.
2. Why agriculture in Newfoundland and Labrador is not important.
3. Why fishing is a principal occupation in these two countries.
4. Why cod-liver oil is the chief product of St. Pierre and Miquelon.
5. Why interior Greenland is uninhabited.
6. How Greenland has been of assistance in Arctic exploration.

Location, size, and population. Newfoundland, an island off the east coast of North America, and Labrador, the easternmost part of the continent, form a part of the British Empire. Their combined area is 162,734 square miles and their total population is 262,299.

By E. M. Newman, from Publishers Photo Service

FIG. 266. **The fishing village of Quidi Vidi, Newfoundland.** This village is near St. Johns (Fig. 254), the capital of Newfoundland. Study the picture. Notice the platforms supported on sticks. For what are they used?

FIG. 267. **The village of St. Pierre.** St. Pierre is the capital of the only territory now held by France on this continent. Find out from history how it happens that France still owns these islands. St. Pierre is a shipping point for cod-liver oil.

Why fishing is the leading industry in Newfoundland and Labrador. Because of their rugged surface and cold, wet climate Newfoundland (Fig. 254) and Labrador are largely unfit for agriculture. Some hay, potatoes, and other hardy vegetables are raised for home use in Newfoundland. The forests here are a valuable resource and furnish wood for paper pulp which is exported in large quantities. There are large paper and pulp mills at Grand Forks in Newfoundland. Labrador is rich in timber resources and minerals. It is especially well watered and has much water power.

Because the great fishing grounds of the Atlantic lie near (Figs. 79 and 266), fishing, especially for cod and halibut, is the principal occupation in Newfoundland, about six-sevenths of the inhabitants being engaged in this industry. Fishing is also the chief industry of Labrador. Textiles and flour are the leading imports to the country, the flour coming mostly from Canada. St. Johns, the capital of Newfoundland, is the only large city. It has a good harbor and is the chief trade center of the island.

St. Pierre and Miquelon. Close to the south coast of Newfoundland lies a small group of islands of which Miquelon and St. Pierre are the largest (Figs. 254 and 267). This island colony, ninety-three square miles in extent is all that is left of the vast possessions France once held in North America. The inhabitants number about five hundred, practically all fishermen. Cod fishing is the chief occupation and cod, dried and fresh, and cod-liver oil are the chief products.

The climate and inhabitants of Greenland. Greenland, which is the largest island in the world, has an area more than three times as great as that of Texas. The island belongs to Denmark. The interior of Greenland is entirely covered with ice, which forms a great glacier. The southern coast is warmer, and here is found a small population consisting of Danes. Most of the inhabitants of Greenland, however, are Eskimos who make their living by hunting and fishing (Fig. 268).

Trade is carried on mostly with Denmark and includes such articles as down gathered from eider ducks, furs, and fish products.

Greenland is perhaps best known as the starting place for those explorers who have attempted to travel over the great seas of ice to the North Pole. The people of this region have given valuable assistance in making these scientific expeditions. Radio and aviation are bringing the people more closely in touch with other regions.

FIG. 268. **A family of Eskimos and their home.** The picture was taken at Godhavn, a settlement on a large island off the west coast of Greenland. What season is it? Why is the hut so low? Would it be easy to heat? What material do you think was used in making it?

Problems of the people. Newfoundland lies on the direct air route between the United States and Europe. Is there any possibility of taking advantage of that fact? At the present time Newfoundland is a country with only one valuable food resource. When the yearly fish catch falls short the people suffer. Is it possible to develop other resources upon which the inhabitants may depend, in part at least, for a living?

Greenland is a vast region of which almost nothing is known. Will it ever be possible to discover its natural resources and then develop them?

SOME RELATED PROBLEMS

1. In what way can the St. Lawrence be made navigable to Lake Ontario for ocean-going vessels?
2. Why do many people from our middle western states migrate into Canada?
3. Find a city in Italy that is about the same distance from the Equator as is Windsor, Ont.
4. Why is the region between Lake Huron and Lake Erie a good fruit country?
5. In what ways may the location of Winnipeg be compared with that of Chicago?
6. Why is Hudson Bay not so useful to commerce as the Gulf of Mexico?
7. Find out something about the work carried on by the Hudson's Bay Company.

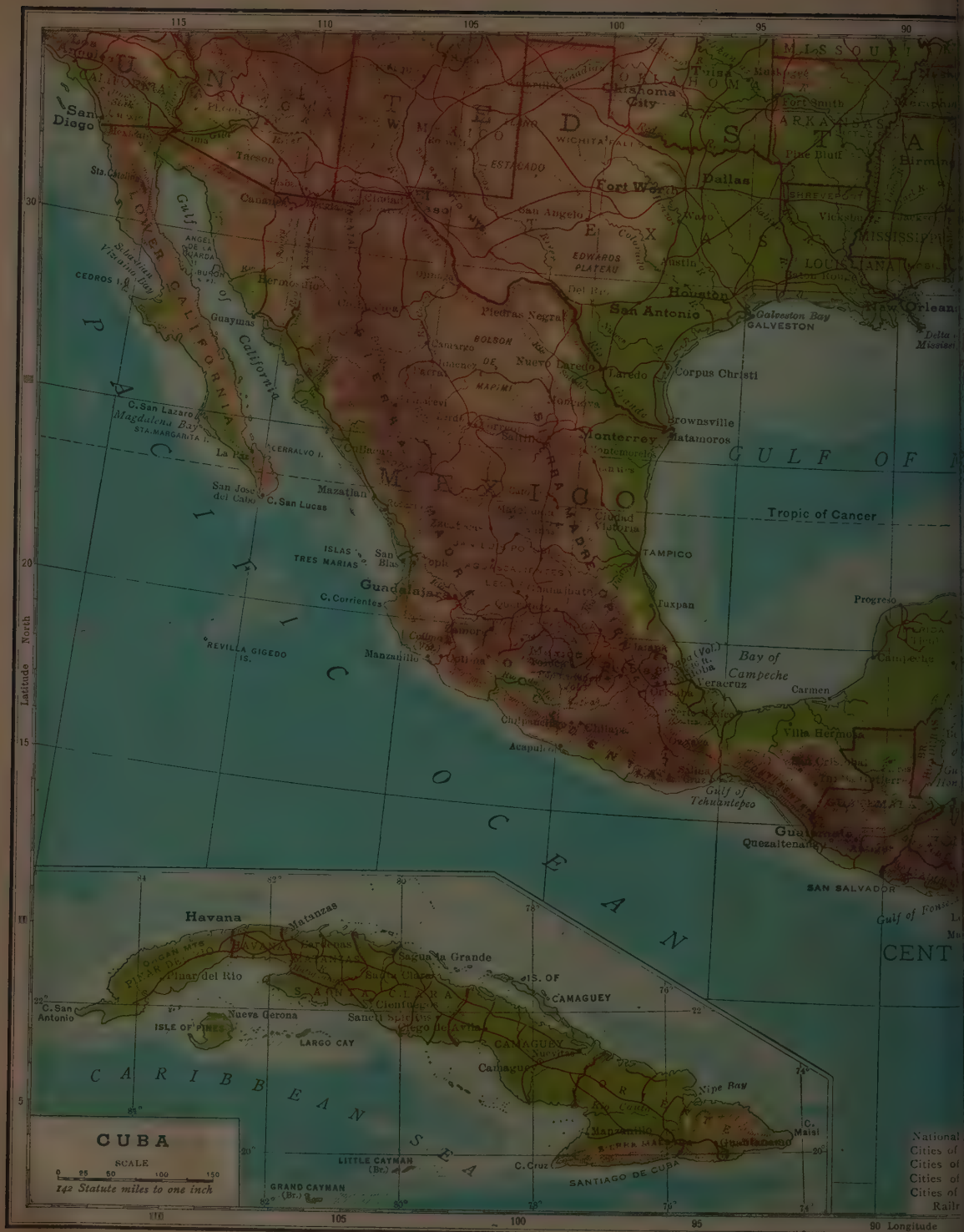
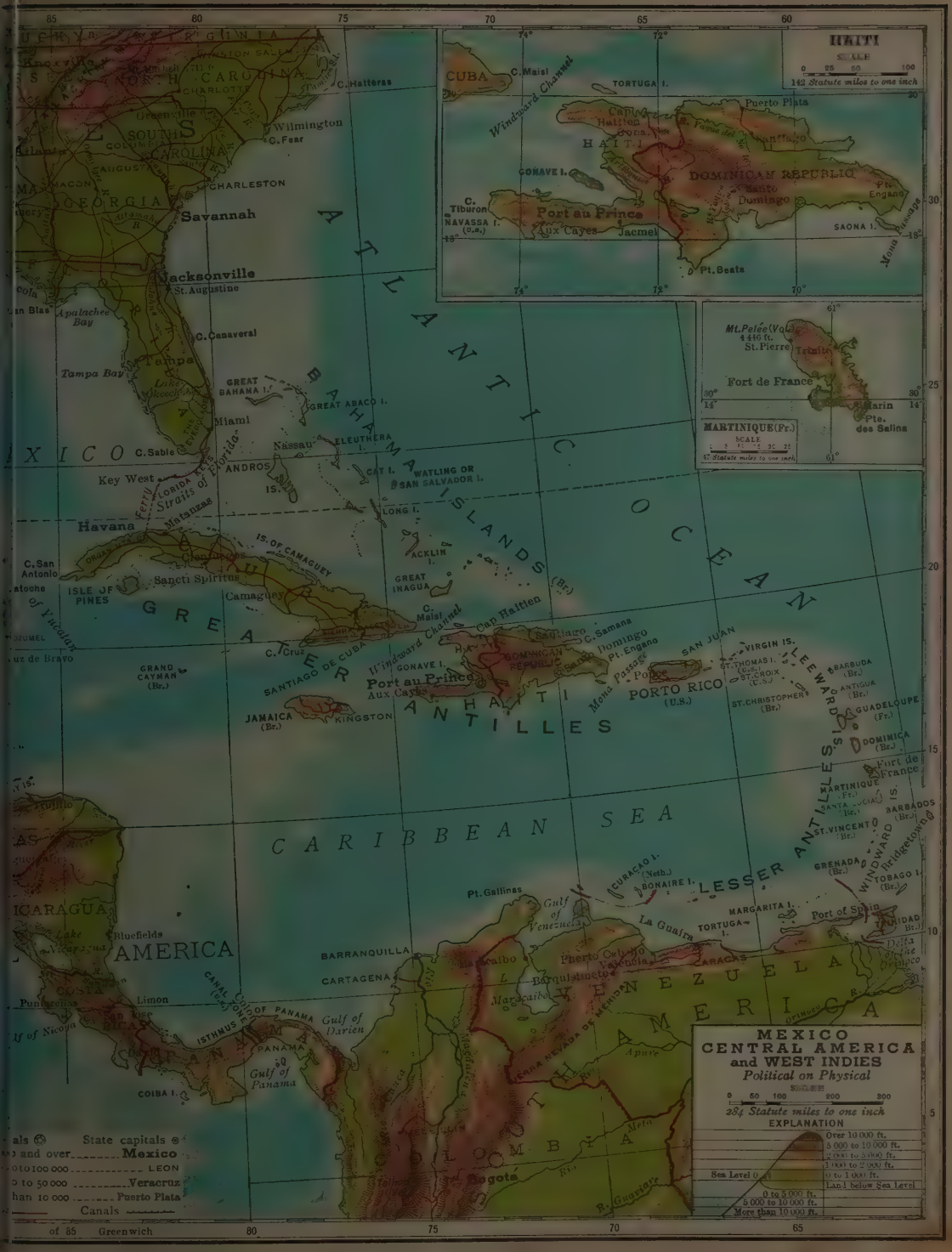


FIG. 269. **A Map of Mexico,**



ral America, and the West Indies

THE COUNTRIES OF SOUTHERN NORTH AMERICA

100. WHAT THE MAPS, TABLES, AND GRAPHS SHOW

Problems:

1. Why are these countries generally not so productive as the United States? (*a*) In which of the regions are found the most extensive plains suitable for agriculture? (Fig. 269.) (*b*) In which region do the plains have the heaviest rainfall? In which is the rainfall most moderate? (Figs. 81 and 270.) (*c*) What region has the most temperate climate and is the most favorable place for people to live? (*d*) Which region produces the most for commerce?
2. In what ways are the West Indies and Central America well situated for trade? (*a*) What is the climate of these countries and what crops are produced here? (*b*) Where are their surplus products marketed? (*c*) Why do the people of the United States and Europe trade with this region? (*d*) What two great ocean routes serve the region?
3. What would be the advantages of an interoceanic water route through Nicaragua? (*a*) What is the character of the land surface in the region where this route might be opened? (*b*) What large lake might become a part of a water route? (*c*) How far is it from this lake to the Pacific? (*d*) What river could also be made a part of this route? (*e*) Why might it be desirable to build a second canal across the isthmus?
4. Why are there no large rivers in the far southern portion of North America? (*a*) What is the distance across the narrowest part of the Isthmus of Panama? (*b*) How far is it from Matamoros to Mazatlan, Mexico? (*c*) Are there any areas in this region that do not drain to the ocean? (*d*) Where are the areas with little rainfall?
5. Why is there but little transportation by canal or river in Mexico?
6. How far inland is Mexico City? (*a*) What are the advantages of this inland position? the disadvantages? (*b*) What port on the Pacific Coast lies nearest to Mexico City? (*c*) Why does not Acapulco's trade increase more rapidly?
7. Consult Fig. 78 and then locate the peninsula of Yucatan on Fig. 269.

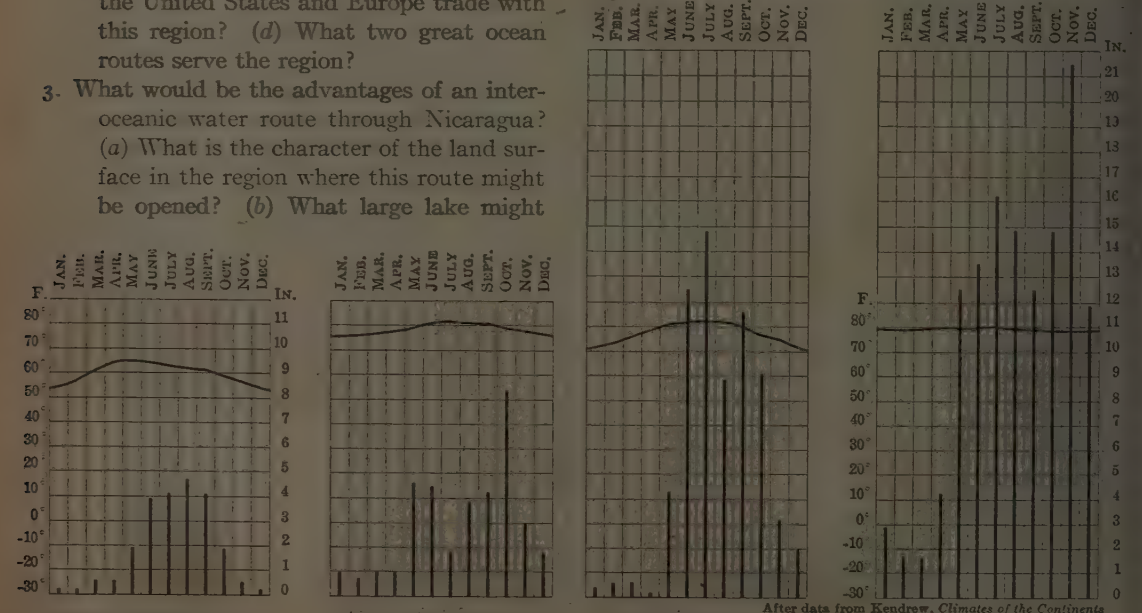

JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT. OCT. NOV. DEC.
F.
IN.
Mexico City, Mexico
Alt. 7,474 ft. Temp. 59.9°
Rainfall 22.8 in.
Kingston, West Indies
Alt. 49 ft. Temp. 78.8°
Rainfall 35.6 in.
Veracruz, Mexico
Alt. 49 ft. Temp. 77.4°
Rainfall 68.0 in.
Colon, Central America
Alt. 164 ft. Temp. 79.5°
Rainfall 129.4 in.
After data from Kendrew, Climates of the Continents

FIG. 270. Average annual temperature and rainfall for four cities of Mexico, Central America, and the West Indies

101. HOW THESE COUNTRIES DIFFER FROM THE UNITED STATES

THE LESSON FORECAST

1. What is meant by the trade winds.
2. How the diversity of the surface affects the distribution of temperature, rainfall, and vegetation.
3. Where most of the inhabitants are found.
4. Why agriculture is the chief occupation.
5. Why it is easy for the natives to make a living.
6. Why certain areas are unhealthful ones in which to live.

Why the United States is interested in this region. The southern part of the continent of North America is occupied by the large republic of Mexico, the several countries that make up Central America, and the great loop of islands bordering the Caribbean Sea and known as the West Indies. This great region is of interest to us for many reasons, but chiefly because year by year our trade with the several countries and the islands is increasing rapidly.

This part of the continent lies in the Hot Belt of the world where the temperatures are always high except in the highland regions. The products of the fields and forests, therefore, are tropical products which we are unable to raise and must import in large quantities.

The winds that blow over this region. The climate in this region differs from that of the warm southern part of the United States because it is nearer the Equator and also because the trade winds sweep over it. These winds blow steadily from the cooler northern regions toward the hottest part of the earth, or the heat equator. In our summer the heat equator is farther north than in our winter, and so the areas over which the trades blow change from month to month. But over most of southern North America the northeast trades blow steadily, except when a great whirling storm causes the winds to blow from all directions toward the center of the storm. Such storms occur frequently in the West Indies during our summer and autumn months and occasionally do great damage to crops, property, and shipping.

Reasons for the uneven distribution of rainfall. As the trade winds approach the Equator they become warmer and are thus better able to absorb moisture. As the winds rise to cross the highlands they are cooled and cause a heavy rainfall on the windward slopes. The windward sides of the islands and continent, therefore, are well watered. The winds become warmer as they descend upon the leeward slopes of the mountains. Thus they become drying winds, and the south and west slopes over which they blow are dry regions, and in some places even deserts.

The influence of elevation on climate and vegetation. This part of North America has a wide variety of climate largely because of the great differences in elevation between the low-lying coastal areas and the interior highlands. From the United States boundary to Panama this region, like the western part of our own country, is made up largely of high mountains and plateaus. As the map (Fig. 269) indicates, there are lowlands on the eastern and western coasts, but the western lowland is very narrow.

In Mexico between the eastern and western mountain ranges is found a high plateau, varying from five to eight thousand feet in altitude. Mexico City, the capital and political center of the great republic of Mexico, lies on this plateau.

The eastern coastal lands up to heights of about 3,000 feet are always warm, moist, and unhealthful, and much dense tropical vegetation is found here. Beyond this region and extending up to about 7,000 feet are the temperate lands with less moisture and a cool, bracing climate much like autumn weather

in the eastern United States. The still higher cold lands extend in places above the snow line, and the highest mountains are always capped with snow, just as are many of the peaks in parts of tropical South America

How the physical features affect the activities of the people. The temperate lands are the most densely occupied, and here agriculture and a number of other industries are carried on. In the moist lowlands are many fruit plantations, but much of this region is covered with dense forests. The western narrow coast region, being very dry, has few people and is in places really a desert.

In no temperature division of these warm countries do we find such sudden changes of weather as we have in most parts of our country. The weather of one day is much like that of another, and there is little change from one season to the next.

The same thing is true in the West Indies, which consist of a series of mountainous islands, many of them very small. On the larger islands we find climatic differences between the east and west coasts, but on the smaller islands the changes are due only to differences in elevation.

In all this vast region, as we have already learned, most of the climatic changes from season to season are due to differences in the winds. And since the trades blow constantly over most of the area, the climate changes but little. The extreme temperatures which we often experience on a hot summer day are not known, and in the hot regions it is always hot, day and night. In the higher plateau regions, however, the days are hot and the nights cool. So the climate in these regions is healthful.

The crops grown throughout the region and the occupations the people follow are determined almost entirely by the climate. Except for mining, carried on in certain sections, most of the people earn their living through agriculture or grazing.

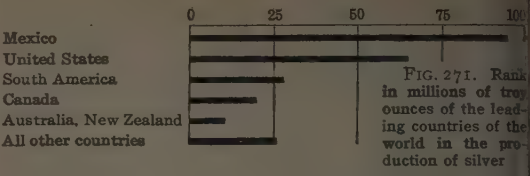


FIG. 271. Rank in millions of troy ounces of the leading countries of the world in the production of silver

In the hot lowlands crops grow luxuriantly the year round, and for a dwelling place only a shelter from rain is needed. The people can easily secure wild fruits and vegetables and build themselves a shelter.

102. THE REPUBLIC OF MEXICO

THE LESSON FORECAST

1. Why the people of our country are interested in Mexico.
2. How the people of Mexico make a living.
3. Why the resources of the country have been but partly developed.
4. Location and importance of the chief cities.
5. Problems of the present and the future.

Why the United States is especially interested in Mexico. Mexico is rich in natural resources, but as yet many of them have not been developed because much of the country is wild and unsettled. The mineral deposits are valuable, including silver, gold, lead, and copper. These minerals are mostly found in the mountainous regions. Silver has been mined in large quantities ever since the first settlement made by Europeans over four hundred years ago (Fig. 271).

The lower coastal plain bordering the Gulf of Mexico is important for its production of petroleum (Figs. 272 and 500). Mexico today produces about a tenth of the world's supply and this amount can be greatly increased (Appendix, Fig. 502). Most of the petroleum is exported to our country. In fact, more than half of Mexico's trade is carried on with the United States. Among the exports are copper, lead, coffee, cotton, vanilla beans, and bananas. We also import henequen, or sisal hemp, as we call it, one of the strongest fibers used in making rope and twine (Fig. 273).

By Burton Holmes, from E. Galloway

FIG. 272. **A scene in Mexico's oil district.** The development of the rich deposits of petroleum in the eastern lowlands of Mexico has as yet brought the country few lasting improvements except good roads.

Why are good roads to the oil fields necessary? What would be shipped out over these roads? List some of the needed supplies that would have to be brought in.

Find out the chief ports for petroleum export. Try to learn why Mexico has benefited so little from its rich oil resources. Notice the thick black smoke in the picture. Can you tell what causes it?

Photo by Underwood & Underwood, New York

FIG. 273. **Drying sisal fiber.** Most of the world's supply of sisal, or henequen, is grown on the dry plains of Yucatan (Fig. 78) and the near-by islands.

After the large leaves have been cut by hand, the pulpy portion is stripped away by machinery. The fiber is then spread out to dry on wires in drying fields such as the one shown in the picture. What advantage is the dry climate in curing the fiber?

For what is sisal used? Why is the sisal crop of so much importance to the grain growers of the United States?

How the people of Mexico make a living. Most of the people of Mexico are engaged in agriculture and grazing. Crops like corn, cotton, wheat, and beans are grown largely for home use. These are all Temperate Zone crops and are grown on the plateaus, irrigation being practiced in some sections. Sugar cane, cacao, and coffee are raised on the lower lands. The number of cattle, sheep, goats, and swine raised is large.

Manufacturing is constantly increasing, but since most of the goods produced in Mexico are similar to those turned out in our own factories they are not exported to this country.

Reasons for the slow development of Mexico. The resources of Mexico have not been developed as have those in our own country, partly because for a long time the country did not have a strong government. The native Indians, who make up nearly half of the population, have not been educated to develop industries or even to carry on agriculture in the best ways. The government is now developing schools and is sending students to our country to study new methods of teaching. In recent years Mexico has grown rapidly in industry and commerce, and today it is one of the most important countries with which our people carry on

trade. Like most mountainous countries Mexico has many streams that can be used to furnish water power, though not many are developed as yet (Fig. 275).

Another reason why the resources have been developed slowly is because only a few people own land. Most of the people work for the owners of the large estates into which the country was early divided. This has caused unrest among the people and is one reason why the progress of Mexico in becoming a strong nation has been slow.

The cities of Mexico. The chief city and capital of this great republic is Mexico City (Fig. 274). It lies in a picturesque valley on the interior plateau at an elevation of over 7,000 feet. The climate is mild and delightful the year round. The trade and manufactures of the city are important, and it has grown rapidly in recent years.

Veracruz and Tampico are the leading ports on the Gulf of Mexico, and from them are exported the products of the hot lowland areas, chief of which are petroleum, coffee, sugar, and tobacco. Both ports have good connections with the interior and with the United States (Fig. 269).

The best harbors are found on the Pacific coast, but their trade is unimportant because they are too far from the producing regions. Acapulco is a fueling station and has the best harbor. Mazatlan, with railroad connections

Courtesy Pan American Union

FIG. 275. **A hydroelectric power house in Mexico.** This power house is located at the edge of the plateau, about ninety-five miles northeast of Mexico City (Fig. 274). The pipes bring the water from falls higher up in the hills. The power generated in this power plant is used for lighting and heating in Mexico City and Puebla, and also for running trams and factories.

Find pictures of other power plants in your geography. How do they differ from this one? Is the slope here steeper than the slopes of other power plants you know?

Copyright by Rand McNally & Company, Chicago

FIG. 274. **Mexico City and its seaport, Veracruz.** Find the edge of the plateau. From the situation of Mexico City, what kind of climate would you expect it to have? Trace the railroads from Mexico City to Veracruz. Notice that they do not run in a straight line between the two cities. Can you tell why? Make a list of the volcanoes shown on this map. How many of them are higher than the highest mountain in the United States? (Consult the Appendix.)

to the South and to California, is the chief industrial and commercial port on the west coast. On the southern plateau are situated Guadalajara, the second largest city of Mexico, and Puebla, noted for its cotton manufactures. In northern Mexico are Monterrey with flourishing factories and a large trade, and San Luis Potosi, a distributing point for the north-central region.

Problems of the people. The fact that great numbers of the Mexican people are uneducated is one of the problems that is now being slowly solved. Another problem is found in the fact that all agricultural lands are really in the hands of just a few people. Mexico is rich in mineral resources which have so far been developed mostly by foreigners, as have also the lands devoted to the raising of sisal and coffee. What can be done to help the Mexicans themselves develop their national resources? While the transportation facilities are fairly good, they cannot handle a greatly increased production. How can an adequate system of transportation be built up? These problems are only a few of the important ones that must be solved if the Mexican people are to enjoy prosperity and better conditions of living.

103. CENTRAL AMERICA: A COMMUNITY OF SMALL REPUBLICS

THE LESSON FORECAST

1. Reasons for our interest in these small republics.
2. How the Panama Canal has benefited these countries.
3. Why the Central American countries trade but little with one another.
4. The maintenance and surplus products of this region.
5. Why the nations in this region are not closely united.
6. Problems of the people.

The countries of the region. The name Central America is given to the group of small countries which lie wholly within the tropics south of Mexico. The combined area of these countries is less than that of Texas. Guatemala, Honduras, Nicaragua, Costa Rica, Salvador, and Panama are all republics. British Honduras is a part of the British Empire, and the Canal Zone is one of our possessions.

How the Panama Canal has benefited this region. We are especially interested in the countries of Central America because of our trade with them in tropical products, and because of the canal we built through the Isthmus of Panama. Before the canal was completed, all water-borne trade between our eastern ports and our west coast had to be carried on around South America. This was a long and expensive, and at times a dangerous, route.

The Panama Canal has shortened by many hundreds of miles the distance by water between western Europe and our west coast. It is today a busy trade and travel route and one of the most important waterways of the world.

Not only has the Panama Canal made it possible for widely separated regions to trade with each other easily, but it has also placed the countries of Central America in close touch with a great trade route. Naturally, therefore, the trade of these countries has increased greatly and the people are today far more prosperous than they ever were before.

The products of Central America. Many countries want the products of this tropical region, especially its coffee, cacao, sugar, bananas, tobacco, and rubber. The moist, warm eastern slopes of the higher regions here, as throughout tropical America, provide favorable conditions for raising these products. Bananas are rapidly becoming an important article of food throughout the United States, and the number of banana plantations in Central America is increasing rapidly.

Otto Gilmore

FIG. 276. **A view near Antigua, Guatemala.** The scene in this picture is typical of the plateau region of Central America.

The lofty mountain that we see in the background is a volcano. Is there anything about its shape that suggests this? Can you tell why the photographer did not get a better picture of the top of the peak? Does this view of the mountain enable you to determine anything definite about its height?

Do you think that it would be difficult to build railroads through this part of Guatemala? Explain the reasons for your answer. Look at the map, Fig. 269. Imagine you are planning a railroad from Galveston, Tex., to the Canal Zone. What route would you follow? Find out if any part of such a railroad has been built. If so, when?

Look carefully at the vegetation in the picture. How many kinds of plants do you see that you are very sure are not found in the region where you live? Does the land around Antigua look as if much of it were cultivated?

Because of the rough character of the surface of these countries (Fig. 276) there are but few railroads and the highways are poor. And since their surplus crops are so much alike, there is little trade between the countries of Central America.

On the higher, more temperate uplands are located the several capital cities with the exception of Panama. Cereals and other foods are raised for home use, but the lower coastal regions have to import most of their cereal foods.

The people and the cities of Central America. Central America, like Mexico, contains many Indians and people of Spanish descent. On the banana and sugar plantations much of the labor is done by negroes, who are used to working in a hot, moist climate. Because of the character of their people and because in many ways the people of the countries are so much alike, these republics have never united in one federation as have the states of our country and of Mexico. Several attempts have been made to bring about their union, but they have not met with success, for the people of each country do not trust the leaders of the other countries. In fact, in some of these republics the people sometimes have so little faith in their own leaders that there are frequent revolutions in which the government is overthrown and a new one set up. Such conditions keep the countries from developing their resources and their trade as they could if they were always at peace.

Guatemala is the most important of the upland cities, and Colon and Panama are the most important of the coast cities.

uatemala, like other centers in this moun-inous region, is frequently shaken by vere earthquakes. Colon, favorably situ-ted at the Atlantic end of the canal, and anama, situated just as favorably at the acific end, will no doubt grow in size and nportance more than any other cities of entral America. The smaller ports which ade in tropical products can only grow as e people of their regions increase their rplus products.

Problems of the people. Most of the entral American republics are separated by ountain barriers, and facilities for trans-ortation and communication are therefore cking. How does this contribute to the ant of trust among these peoples? Some f the countries produce no surplus products sell or trade and are therefore unable to et together wealth with which to develop eir resources or to buy from other coun-ies. How would it be possible for the atives to raise larger crops of surplus roducts and thus secure the benefits of an creased trade?

The location of these countries close to e great Panama Canal route and to the nited States provides them a favorable pportunity for the development of their sources. How can the people living here e led to take advantage of these conditions?

104. THE WEST INDIES: AMERICAN INTERCONTINENTAL ISLANDS

THE LESSON FORECAST

1. The several groups of islands and the different countries to which they belong.
2. The characteristics of the people.
3. The early influence of the Spanish upon the region.
4. Why the West Indies are a favorite resort region.
5. The leading cities.
6. The maintenance and surplus products of the islands.
7. Problems of the people.

Where these islands are and to whom they belong. The West Indies include the many islands, large and small, that extend in a curve around the Caribbean Sea for a distance greater than that from Chicago to San Francisco. The islands north of the Caribbean are known as the Greater Antilles, and those to the east of it, reaching almost to the shores of South America, as the Lesser Antilles.

In the West Indies are found three independent countries, Cuba, Haiti, and the Dominican Republic, all to a certain extent under the influence of the government of the United States. Porto Rico and the Virgin Islands, as we have learned, belong to the United States. Jamaica, the Bahamas, and several smaller islands are parts of the British Empire. The remaining small islands of these groups belong either to France or to the Netherlands.

The physical features of the islands. The Bahamas are low-lying islands, built up by the corals that live in warm tropical waters. The soil is not especially rich. Growing sisal hemp and sponge fishing are the chief industries. The climate of this group is delightful, especially during our winter. The Bahamas are therefore a winter resort visited by many people from our country. Our trade with these islands is small and consists mostly of sponges and henequen. Other products sent us are fruits, especially pineapples and tomatoes, and certain vegetables.

Most of the islands of the West Indies are mountainous and have therefore a variety of surface and climate. Some of the islands are volcanic. Mount Pelée, on the island of Martinique, was in eruption in 1902 and destroyed the city of St. Pierre. Wherever the slopes are not too steep, the rich soil and the warm, moist tropical climate make it easy to raise crops. Before the land can be cultivated it must be cleared of the dense tropical vegetation which covers it.

Courtesy Agricultural Experimont Station, Cuba

FIG. 277. **Sugar cane in Cuba.** The cane seen in the picture is ready for cutting. Judged by the height of the man and horse, about how tall is it? Why do you think the leaves are stripped from the cane before it is crushed?

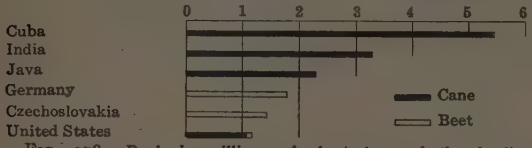


FIG. 278. **Rank in millions of short tons of the leading countries of the world in sugar production**

The industrial activities of the people. Cuba, the large island lying nearest the United States, is one of the great sources of the sugar and tobacco used in this country (Figs. 277, 278, and 279). The raw sugar is shipped here to be refined and the tobacco to be made into cigars.

Sugar and tobacco are grown on other islands of the West Indies, but most of them are better known for their more tropical products, such as citrus fruits, coconuts, pineapples, and bananas.

A valuable product secured from Trinidad, one of the smaller islands, is asphalt, used extensively in the making of roads and roofs. A large lake of asphalt is the source of supply for this export, one that the world need in constantly increasing quantities.

The people and the cities. Throughout al the West Indies negroes are numerous. I Haiti they form by far the larger part of th population. Most of the labor for farmin and other occupations is furnished by th negroes or by natives. In the most impor tant industrial centers white people are th owners and the managers of the plantation and factories. Most of the people of th West Indies make their living by agricultur and import the manufactured goods an machinery they need. Cereals must als be imported.

Havana, Cuba, is the leading city and por of the West Indies. Its location near th United States, its fine harbor, and its ra connections with the sugar and tobacco sec tions of the interior have helped to make i the leading port of the island. Havana which is about the size of New Orleans, i one of the oldest and most interesting citie of the West Indies. The people still follow the customs of the Spaniards who settled an long controlled the island. The city is favored resort for visitors from our country Santiago de Cuba is the chief port of th mountainous southeast coast.

On the island of Haiti, long known a Hispaniola and San Domingo, are the Repub lic of Haiti and the Dominican Republic Port au Prince, the capital of Haiti, and Santo Domingo of the Dominican Republic, ar the leading ports. Port au Prince has a excellent natural harbor.

In the island of Jamaica, one of the British West Indies, are the two fruit ports Kingston and Port Antonio, from which steamers ply regularly to Boston and New York. Othe cities of interest are Nassau, the city most visited in the Bahamas, and Port of Spain on the island of Trinidad.

In these rich islands of the West Indies there are still great areas that can be turned

to the raising of those tropical products demanded by the world markets in increasing quantities each year. Some of these products, such as sugar, tobacco, and pineapples, are also produced in our own country. But Cuban tobacco is used for quite different purposes than is our tobacco, and it is therefore in great demand. Sugar can be raised much more easily in the tropics than in our southern states, and many tropical fruits we cannot grow. Neither can we grow certain valuable tropical trees. As our demands increase, therefore, the West Indies will be called upon more and more to furnish us the tropical products we need.

During the years when the larger islands were under the control of Spain business and industries were not successful. Today, however, conditions are different, and the future outlook for most of the islands of this rich and interesting region is most promising.

Problems of the people. The plantation system of agriculture, which at present seems the only successful one to follow in the West Indies, brings wealth to the owners but not to the workers. Can the people be taught to be more independent, to own land and sell the products, instead of remaining laborers? Such changes have been brought about in many parts of our southern states, especially among the negroes.

Although Mexico, Central America, and the West Indies are especially well adapted to the raising of coffee, its production is not very profitable because of competition with Brazil. Is there any way of remedying this situation? Since the most profitable crop raised throughout the region is sugar cane, other crops are being crowded out, thus making each island largely a one-crop region. Is this desirable?

Because in much of southern North America the people can secure the necessities of life rather easily, they are not inclined to work hard or steadily. As a result they are generally poor and unable to buy many of the things we consider important for comfort or pleasure. Can anything be done to arouse a desire in these people to improve their living conditions by making better use of their opportunities?

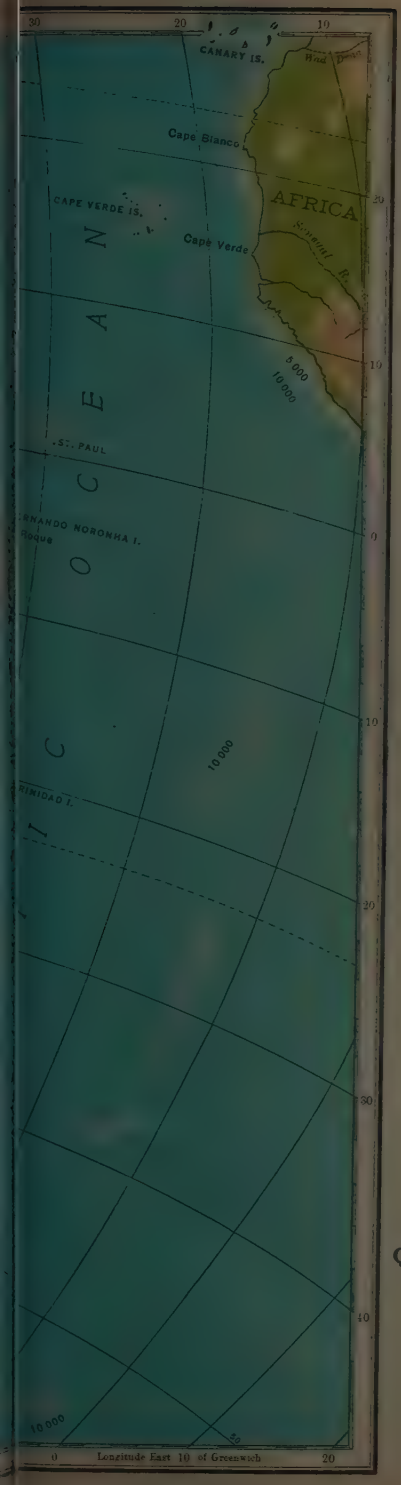
Courtesy United Fruit Company, Boston, Mass.

FIG. 279. **Hauling sugar cane to the mill in Cuba.** What has been done to the cane besides cutting it? Do you see any leaves in the picture? Why are caterpillar wheels used on the tractor and carts? Explain caterpillar wheels.

SOME RELATED PROBLEMS

1. Why are the west and south coasts in this area dryer than the east and north coasts?
2. Why are our wheat farmers especially interested in the farmers of Yucatan?
3. How would the building of more good railroads help the Mexican people?
4. How may increasing use of automobiles in Mexico affect the condition of the roads?
5. Why can sugar be produced cheaper in Cuba than it can in Louisiana?
6. Why is there such a variety of climate in Mexico and Central America?
7. From the rainfall graphs of this region find how the rainfall is distributed as to both time and place. Explain the conditions.
8. Why is much of the agriculture carried on by hand rather than by machine?
9. Why are we specially interested in the forests of Central America?
10. How has refrigeration helped the people of Central America and the West Indies?
11. What are the evidences that a rather highly developed civilization existed in Mexico long before the discovery of America?

FIG. 280. A Physical Map of South America



SOUTH AMERICA

105. WHAT THE MAPS, TABLES, AND GRAPHS SHOW

Problems:

1. Why is there more rainfall in some sections of South America than in others? (*a*) Locate five places where the yearly average of the rainfall is over eighty inches (Fig. 284). (*b*) Study the location of the mountain ranges and the direction of the winds and see if you can explain the wet coastal areas in the East. (*c*) The Amazon Valley lies in the Equatorial Rain Belt. What causes heavy rains in this valley? (*d*) What reasons do the physical and wind maps offer for the dry eastern and western coasts? (*e*) Why does Manáos have a heavier rainfall in March than in September? (Fig. 281.) (*f*) Account for the low rainfall at Bahia Blanca. (*g*) How does Fig. 495 explain the seasonal distribution of rainfall at Recife (Pernambuco)?
2. Why were the highlands of the northern Andes the most easily explored and once the most highly civilized part of South America? (*a*) Why were the Amazon and Orinoco lowlands so difficult to enter? (Figs. 280, 284, and 285.) (*b*) What valley extending southward from the Caribbean Sea formed a natural gateway to the Andean highlands? (*c*) Why is it that near the Equator the highlands are a better place in which to live than the lowlands?
3. Why are the great rivers of South America little used for commerce? (*a*) Consult the population map to help solve this problem (Fig. 287). (*b*) What is the climate of the Amazon and Orinoco valleys and what is its effect upon vegetation? (*c*) What does the mineral map (Fig. 282) show as to sources of products for export?
4. Why has South America developed so slowly? (*a*) When did Columbus discover South America? (*b*) What European nations were most interested in exploring and developing the new lands in America? (*c*) Which of the two American continents has the greatest extent of territory with a climate like that of northern Europe? (*d*) In which could the early settlers from Europe most easily make a living by agriculture? Why? (Figs. 78, 280, and Appendix, 496.) (*e*) In which continent is the temperate region nearer the markets of Europe? (Fig. 73.)
5. Why do most of the European immigrants to South America settle in the southern part of the continent?

Questions:

1. What European countries control territory in South America or its near-by islands?
2. What countries would you touch and at what ports could you call on these trips: (*a*) Along the west coast from the Canal Zone to the Strait of Magellan? (*b*) Along the east coast from Cape São Roque to the Strait of Magellan? (*c*) Along the coast from the Canal Zone to Cape São Roque?

THE LATIN-AMERICAN CONTINENT

106. EXPLORATION AND SETTLEMENT

THE LESSON FORECAST

1. Why it was easy for Europeans to sail to South America.
2. Why South America is more easily entered from the Atlantic than from the Pacific side.
3. Why this is called the Latin-American continent.
4. Reasons for the slow development of South America.

The coming of white men. South America, like North America, was explored and in part settled by people from southern Europe. We have seen how the Spaniards also came to the West Indies and Central America and explored parts of southern United States. It was easy for people to cross the Atlantic from southern Europe to the West Indies and northern South America because over this part of the ocean the winds blow steadily from the northeast. These are the trade winds, which we have already learned are so important in bringing rain to the hot countries of Central America and the West Indies (sec. 101).

Latin America. South America, like North America, is much more easily entered from the Atlantic Ocean than from the Pacific because the great rivers of the interior flow from the west to the east. Then, too, the good harbors are much more numerous along the Atlantic coast. The Spaniards and Portuguese settled in the most desirable parts of South America, and today Spanish is the language most used throughout the continent except in Brazil where Portuguese is spoken. Because most of the people speak these languages which come from the ancient Latin language, South America is sometimes called the Latin-American continent. Indeed, Mexico and Central America as well are often spoken of as a part of Latin America.

Reasons for the slow development of South America. While the Spaniards and Portuguese found many favorable conditions in the regions they settled in South America, they did not find so healthful a climate or a region so easily occupied as did the English and French who settled North America. That is one reason why most of the countries of South America have not developed into such strong and powerful nations as those of temperate North America, and why their resources have not been so fully developed.

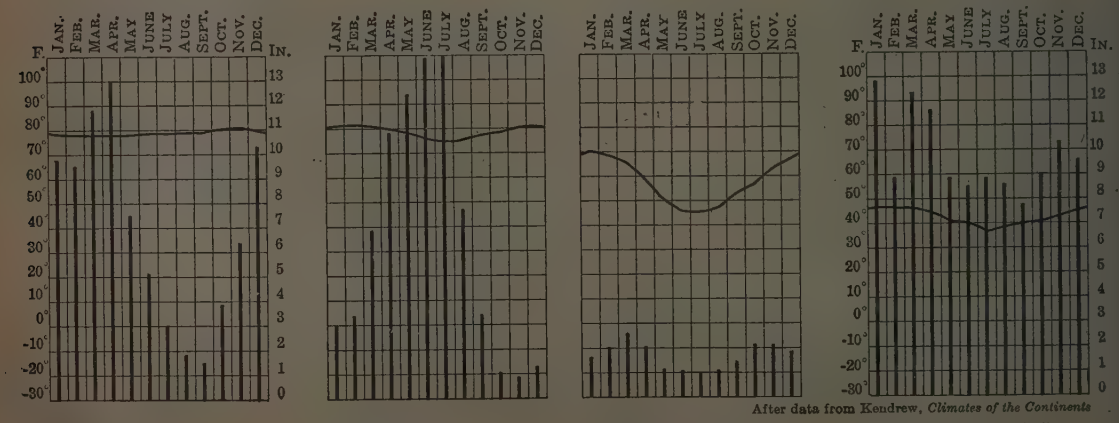

F.
IN.
JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT. OCT. NOV. DEC.
100° 90° 80° 70° 60° 50° 40° 30° 20° 10° 0° -10° -20° -30°
13 12 11 10 9 8 7 6 5 4 3 2 1 0
After data from Kendrew, *Climates of the Continents*
Manáos, Brazil
Alt. 131 ft. Temp. 79.0°
Rainfall 83.7. in.
Recife, Brazil
Alt. 08 ft. Temp. 79.0°
Rainfall 78.9 in.
Bahia Blanca, Argentina
Alt. 49 ft. Temp. 58.1°
Rainfall 20.8 in.
Evangelist Island, Chile
Alt. 174 ft. Temp. 42.7°
Rainfall 117.0 in.

FIG. 281. **Average annual temperature and rainfall for four places in South America**

107. SURFACE AND DRAINAGE FEATURES OF SOUTH AMERICA

THE LESSON FORECAST

1. Comparison of the two Americas.
2. The high western mountain barrier of South America.
3. Why the Andean Highland is easily reached from the north.
4. Why the high plateaus in the Andes are important.
5. Reason for the many islands along the southwestern coast of South America.

Some comparisons and contrasts. The widest part of North America and its most fertile regions lie in the Temperate Belt. South America is very narrow in the Temperate Belt, with its broadest part lying in the hot tropics bordering the Equator. North America and South America are alike in having their highest land in the western Cordillera, and in having their broad plains in the section farther east. In both continents the largest streams drain from the highlands to the Atlantic, but in South America the largest river, the Amazon, flows east instead of south as does the Mississippi. The climate of the Amazon Valley is therefore uniform throughout most of its extent. Unlike South America, where the streams draining to the Pacific are short and of little volume, in North America several large navigable streams flow through fertile valleys from the western highlands.

The Cordilleran Highland. In South America the western Cordillera is higher than the Cordilleran Highland of North America. Except in a few places it cannot be crossed easily and only two railroads traverse it from coast to coast. Because of the steep grades necessary to cross the great mountains, these railroads are expensive to operate. They are therefore but little used for carrying freight, and thus the east–west coast trade of South America is small as compared with that of North America.

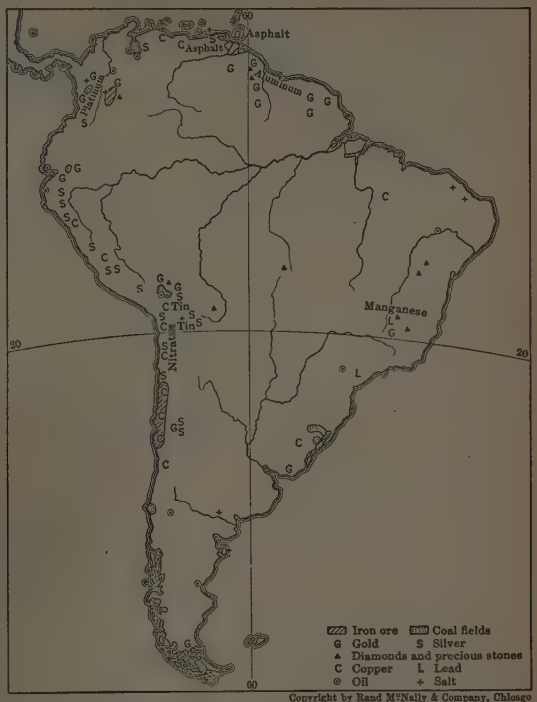
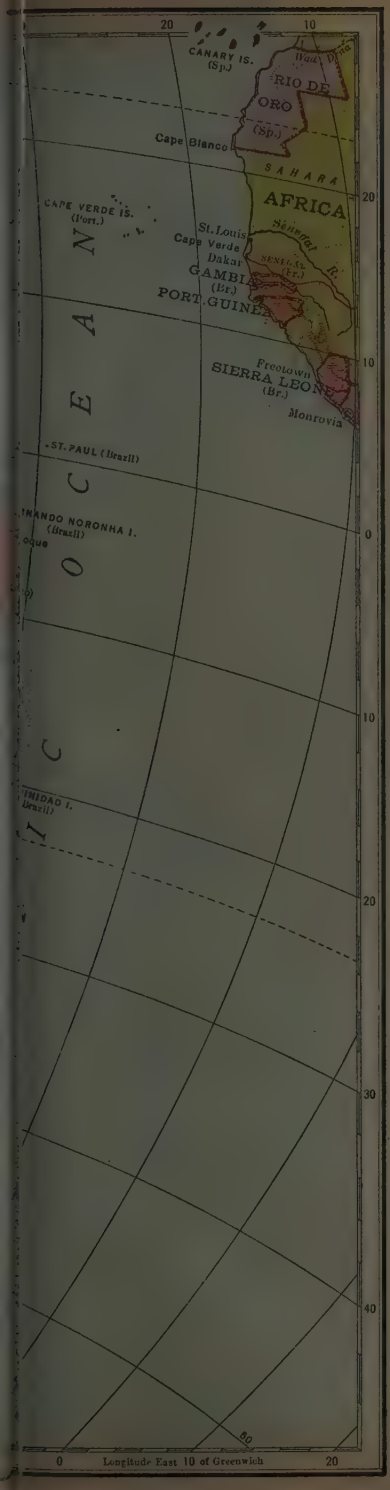


FIG. 282. **Distribution of minerals in South America.** Compare the distribution of minerals in South America and North America (Fig. 84). What advantage has North America in its coal and iron-ore deposits? In what South American countries is petroleum found? Has South America any minerals not mined in North America?

The high Central Plateaus. In Colombia, Magdalena River flows northward between the east and the west ranges of the Andes. This long, narrow river valley offers an entrance from the ocean to the high sections which are the most populous of this region. Farther south in Bolivia and Peru another high plateau lies between the east and the west ranges of the Andes. Unlike the western plateau country in North America, the Plateau of Bolivia, in spite of its cold, dry climate, is well settled. This is because the rocks here contain valuable minerals which have been mined for centuries (Fig. 282).

The southern Andes. Southward from Ecuador towering peaks are numerous, Mount Aconcagua in Chile being the highest mountain in the entire Western Hemisphere. These lofty peaks, many of which are of

FIG. 283. A Political Map of South America



volcanic origin, tower in snow-capped majesty high above the surrounding mountains.

Farther south the mountains are lower, and in southern Chile many of them have been partly submerged beneath the waters of the sea. The higher peaks rising above the water as islands break up the coast line into an irregular one like the coast lines of British Columbia and Alaska.

108. DISTRIBUTION OF LIFE FEATURES AND CLIMATE

THE LESSON FORECAST

1. Why the Americas differ greatly in climate.
2. The cause of the trade winds.
3. What the Doldrums are.
4. Reasons for the dense tropical forests.
5. Why certain tropical areas are grasslands.
6. The changes in vegetation observed as one ascends mountain slopes in the tropics.
7. Contrasts in rainfall and vegetation on the windward and leeward slopes of the mountains.
8. The climate and distribution of vegetation in the temperate part of the continent.

The tropical wind and rain belts of the world. As we have already learned, North America and South America are quite unlike in climate. The Equator crosses the broadest part of South America, and only in the southern part of the continent is there a temperate climate such as is found in so large a portion of North America.

The prevailing climate of the world changes gradually as one travels either north or south from the equatorial region. For several hundred miles on both sides of the Equator the sun shines almost vertically every day in the year and everywhere it is very warm except on the mountains. This Hot Equatorial Belt is the center of the great wind systems of the world. The trade winds blow in constantly toward the hottest portions of this belt, where they rise producing very heavy rainfall (Fig. 284). The air is almost motionless in this hot central belt, known as the tropics, and in the days of sailing vessels ships were often becalmed here for days. The sailors were depressed because of the delays, and hence the name Doldrums was given to this belt of equatorial calms.

The forests and grasslands of the tropics. There are two seasons in the tropical part of South America, the rainy season and the less rainy, according to the position of the sun. If it is in the zenith, that is, shining directly upon the Equatorial Belt, as in March and September, the rains are heavy. If the direct rays of the sun are falling north of the Equator as in

FIG. 284. **Distribution of rainfall in South America.** Can you explain the heavy rainfall in the Amazon Valley and on the southeast coast of Brazil, and the arid condition of the west coast of the continent in the same latitude? Why should the west coast of southern South America be wet and the east coast dry?

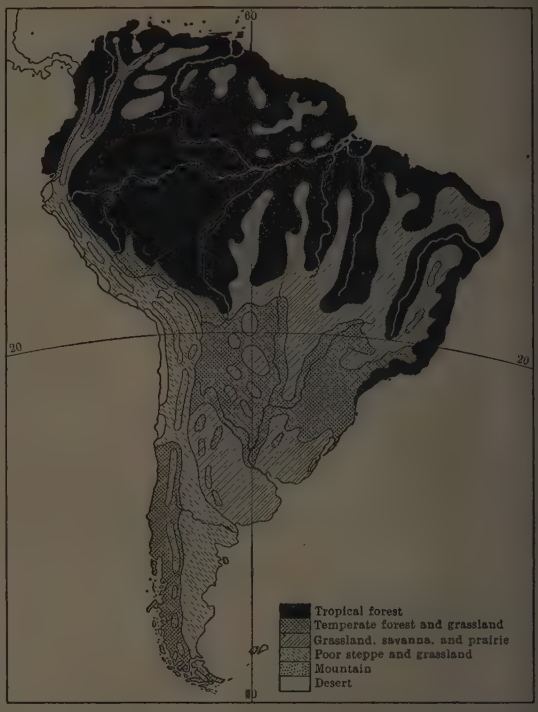


FIG. 285. **Distribution of vegetation in South America.** Consult Fig. 284 and read again section 31. How can you account for the tropical forests and savannas of South America? Why are there both tropical forests and savannas in central Brazil? Learn the reasons for the forests and steppes of southern South America.

our summer, or south of the Equator as in our winter, the rainfall is less. In such a hot, moist region vegetation grows luxuriantly. Here in the Amazon Basin is found the heaviest vegetation in the world (Fig. 285). In some places the trees grow to tremendous heights while the other smaller trees, shrubs, and vines form an almost impenetrable cover of vegetation near the ground.

Few people can live in such a region except along the streams or in clearings. In many places the vegetation is so dense that the sunshine never penetrates through the foliage. Even wild animals avoid a region such as this.

North and south of the forested area lie the grasslands where the rain comes only in the short season when the sun's rays are most direct. Immediately after the rain vegetation flourishes but soon dries on the stalk, furnishing excellent pasturage for either wild or domestic animals. In Africa these hot grasslands abound in wild game, but upon the grasslands of South America wild animals are less numerous and much grazing is carried on. In the valley of the Orinoco these grassland areas are known as llanos; in Brazil they are called campos.

How elevation affects both climate and vegetation. There is but little variation in climate and vegetation throughout the llanos and the campos. Everywhere they are the same. But when the high eastern slopes of the Andes are reached, conditions are different. The temperature changes as one climbs higher and higher. The lower eastern slopes of this tropical belt are densely covered with forests which furnish many woods and gums that are valuable for trade.

Above the tropical hot slopes lie the cooler lands where vegetation and crops are much like those grown in similar regions in Mexico (Fig. 285). Above the timber line is found the region of low-growing shrubs, and above this are the permanent ice fields. A trip up these mountain slopes shows the variation in vegetation that one would find when traveling from the Equator nearly to the poles. While the vegetation upon these higher slopes is that of the Temperate Zone, yet the weather is very different from ours.

Contrasts between windward and leeward slopes. As the easterly trades cross the high Cordilleras they lose their moisture and descend to the Pacific as drying winds. Along the coast from Ecuador to Chile we find, therefore, a long and narrow desert where no one lives except those interested in developing the valuable mineral resources found there (Figs. 282 and 287).

In the southern part of the continent, however, the winds blow in from the Pacific, and the eastern side of the mountains is therefore dryer than the western. Here is found a region much like our western plains which lie near the mountains, and like our plains this area is largely devoted to grazing. Farther east the climate grows more moist and we find a region much like our prairies. As in our country, these areas are a rapidly developing agricultural region.

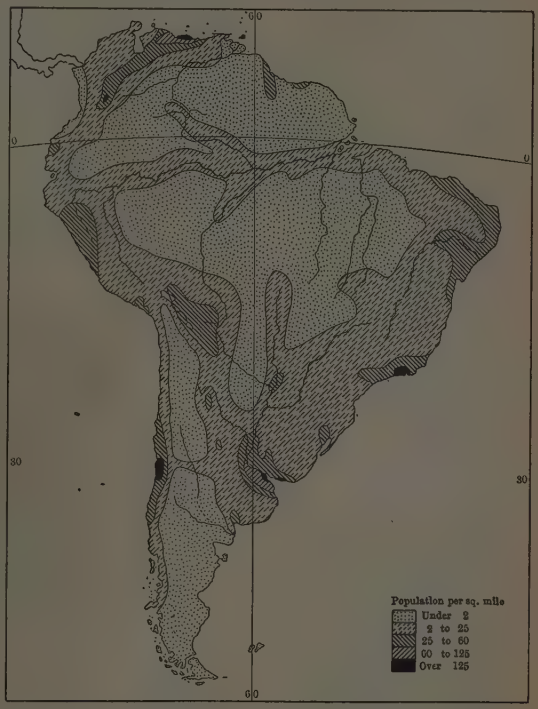


FIG. 287. **Distribution of population in South America.** Compare the population in the Amazon Valley and the Mississippi Valley (Fig. 104). Can you account for the difference per square mile? In what part of tropical South America are most people found? Why? Why may a rapid increase in population be expected in South America?

Courtesy U. S Department of Agriculture

FIG. 286. **A scene near Bogotá, Colombia.** Bogotá, the capital of Colombia, is beautifully situated at the eastern edge of a high plain known as a sabana, or savanna. This great plain is nearly seventy miles long and thirty miles wide. Back of the sabana rise the ranges of the Andes with their snow-capped peaks. Fringing the city are groves of eucalyptus trees.

How far is Bogotá from the Equator? (Fig. 288.) Find out how much rainfall there is in this region. Can you explain why no heavy tropical vegetation is seen in this picture?

ARUBA I.
CURAÇAO I.
BONAIRE I.
Pt. Gallinas
Gulf of Venezuela
Santa Marta
Barranquilla
Puerto Columbia
Cartagena
CARIBBEAN SEA
Puerto Cabello
TORTUGA I.
La Guaira
Curaçao
MARGARITA I.
Carupano
TOBAGO I. (Br.)
Port of Spain
TRINIDAD (Br.)
Maracaibo
Coro
Barquisimeto
Valencia
Maracay
Caracas
Calabozo
Barcelona
Delta of the Orinoco
CANAL ZONE (U.S.)
Colon
Panama
Gulf of Panama
Gulf of Darien
Limon
Portobello
ISTHMUS OF PANAMA
COIBA I.
Gulf of Panama
C. Corrientes
Buenaventura
Tumaco
Esmeraldas
C. San Francisco
Manta
Guayaquil
Gulf of Guayaquil
PUNA I.
Pt. Parina
Payta
Sechura Bay
C. Aguja
LOBOS IS.
Pacasmayo
Salaverry
Chimbote
Nudo de Pasco
Huacho
Callao
Huancavelica
Ayacucho
CHINCHA IS.
Curaçoa
Mollendo
Ilo
Arica
Pisagua
Iquique
R. Loa
Tocopilla
Cerro de Pasco
Oroya
Lima
Huancayo
Mt. Illampu (Sorata)
Cochabamba
Santa Cruz
Sucre
Potosi
Oruro
L. Titicaca
L. Poopo
Valle Grande
Sucre
Santiago
Concepcion
Trinidad
Puerto Brais
Puerto Maldonado
L. Rojo Aguado
Elberalta
Villa Bella
Guajara-Mirim
Rio Branco (Ter.)
Porto Acre
Senna Madureira
Porto Velho
Sto. Antonio Falls
Labrea
Humayta
Quicio
Canoiama
Tabatinga
São Paulo de Olivença
Coary
Fonte Boa
Teffe
São Gabriel
Castanheiro
Barcellos
Boa Vista
Caracaraí
Tarumã
Mt. Duida
Mt. Roraima
Esmeralda
Ature
Mt. Cocuy
Cucuta
Bucaramanga
Bogota
Rio Orocue
Medellin
Manizales
Ibague
Neiva
Popayan
Pasto
Tulcan
Ipiales
Florencia
Buenaventura
Cali
Cartago
Armenia
Honda
Girardot
Ambato
Riobamba
Cuenca
Loja
Zaruma
Guayaquil
Puna I.
Tumbez
Payta
Piura
Huancabamba
Jaen
Iquitos
Rio Napo
Rio Putumayo
Rio Caqueta
Rio Guaviare
Rio Meta
Rio Arauca
Rio Apure
Rio Orinoco
Rio Negro
Rio Solimões
Rio Amazon
Rio Jurua
Rio Purus
Rio Madeira
Rio Javary
Rio Jutahy
Rio Jamundy
Rio Beni
Rio Mamore
Rio Guapore
Rio Paraguay
Rio Paraguay
Rio Pilcomayo
Rio Bermejo
Rio Grande
Rio Pilaya
Rio Parapiti
Rio Negro
Rio Uruguay
Rio Paraguay
Rio Paraguay
Rio Para

National capitals ⊛ State capitals ⊙
Cities of 1 000 000 and over Rio de Janeiro
Cities of 500 000 to 1 000 000 SÃO PAULO
Cities of 100 000 to 500 000 São Salvador
Cities of less than 100 000 Caracas
Railroads Canals
NORTHERN SOUTH AMERICA
Political on Physical
SCALE
0 50 100 200 300
284 Statute miles to one inch
EXPLANATION
5000 to 10 000 ft.
2000 to 5000 ft.
1000 to 2000 ft.
Land below Sea Level
0 to 500 ft.
500 to 1000 ft.
More than 10 000 ft.
West of Greenwich 55 50 45 40 35
ATLANTIC OCEAN
Equator
Georgetown
New Amsterdam
Paramaribo
SURINAM (Dutch)
GUIANA (Fr.)
Cayenne
C. Orange
Oyapock
Cunany
MARACÁ I.
Canal do Norte
Mouths of the Amazon
CAVIANA I.
Canal do Sul
Macapá
Rio Pará
Breves
MARAJÓ I.
Belem (Pará)
Bragança
Cururupu
Alcantara
São Luiz
Parnahyba
Rosario
Vianna
Camocim
Brejo
Piracuruca
Sobral
Fortaleza (Ceará)
Aracaty
Macáo
Caxias
Therezina
Caturité
Crateus
PARÁ
MARANHÃO
PIAUHY
CEARA
RIO GRANDE DO NORTE
PARAHYBA
PERNAMBUCO
ALAGOAS
SERGIPE
BAHIA
FERNANDO NORONHA I. (Brazil)
ROCAS I.
C. São Roque
Natal
Cabedello
Parahyba
Nazareth
Recife (Pernambuco)
Barreiros
Maceió
Penedo
Aracajú
Estancia
São Salvador (Bahia)
Ilhéos
Belmonte
ABROLHOS IS.
Santa Cruz
Victoria
Guarapary
R. Parahyba
C. Frio
Nictheroy
Rio de Janeiro
Santos
SÃO PAULO
Mt. Itatiaya
Campos
Barra do Corda
Carolina
São João de Araguaya
Porto de Moz
Obidos
Almeirim
Santarém
Faro
Manaos
Barcellos
Boa Vista
Amarante
Obirau
Picos
Santa Philomena
São Raymundo
Petrolina
Floresta
Jatobá
Porto Nacional
Natividade
Palma
Barreiras
Rio Grande
Bomfim
Jacobina
Lençóes
Carinhanha
Caetité
Condeuba
Cachoeira
Santo Amaro
Nazareth
Victoria
Villa de Sant'Anna
Leopoldina
Pyrenopolis
Goyaz
FEDERAL DISTRICT
Formosa
Jaraguá
Rio Pardo
Compriata
Bomfim
Bella Vista
Rio Verde
Caldas
Paracatú
Pirapora
Minas Novas
Diamantina
Ouro Preto
Arraya
Fanado
Uberaba
Barbacena
Rio Grande
Campo Grande
Nioac
Bella Vista
Porto Tibiriça
São Carlos do Pinhal
Ribeirão Preto
Jundiahy
Campinas
Rio Verde
Coxim
Corumbá
Puerto Esperança
Cuyaba
PLATEAU OF MATTO GROSSO
MATTO GROSSO
GUAY
Rio Madeira
Rio Tapajos
Rio Xingú
Rio Tocantins
Rio Araguaya
Rio Paraguay
Rio Paraná
Rio Grande
Rio São Francisco
Rio Parnahyba
Rio Mearim
Rio Itapicurú
Rio Pardo
Rio Jequitinhonha
Rio Doce
Rio Paraiba
Rio Sapucahy
Rio Grande
Rio Tieté
Rio Pardo
Rio Verde
Rio Paraguay
Rio Paraná
Rio Paraguay
Rio Paraná
Rio Paraguay
Rio Paraná

COUNTRIES OF TROPICAL SOUTH AMERICA

109. WHAT THE MAPS, TABLES, AND GRAPHS SHOW

Problems:

1. List in a column the countries of the northern portion of South America. In a second column opposite the name of each country place the state or the group of states of the United States which apparently is about the same size (Figs. 89 and 288). (*a*) Do the map scales make such a comparison of areas easy? (*b*) Use the Appendix to check your estimates.
2. How does this section of South America compare in size with the United States and with Canada? (Figs. 89, 254, and 288.) (*a*) Compare the distance from Recife to Guayaquil with the distance from (1) Vancouver, British Columbia, to St. Johns, Newfoundland; (2) Miami, Fla., to Seattle, Wash.
3. Why is it probable that both travel and transportation in the tropical lowlands of South America will long continue to be largely by water? (*a*) Why is it difficult to build railroads in the Amazon Valley? (*b*) Which rivers are badly obstructed by falls? (*c*) Could the valley of the Amazon be easily connected by canals with the Orinoco Valley and with the Plata-Paraná Valley? (*d*) Do you think this would be a practical way for products from eastern Bolivia, Peru, Ecuador, and Colombia to reach the ocean highway?
4. How do the rainfall and temperature vary from month to month in tropical South America? (*a*) Why is there little variation from month to month in weather conditions? (Figs. 281 and 289.) (*b*) Why is it cooler throughout the year at Bogotá than at Georgetown? (*c*) Why is there a greater variation in rainfall and temperature at Rio than at Bogotá or Georgetown? (*d*) Compare Rio and Key West as to latitude and as to rainfall at different seasons (Figs. 145 and 289). (*e*) Why does Iquique have little rainfall? (Fig. 289.) (*f*) Why would you expect Georgetown and Recife to differ as to time of hottest weather? (Figs. 281 and 289.)
5. Why are nearly all the cities of tropical South America near the coast?

Questions:

1. What countries border on Brazil?
2. Why was Rio Roosevelt given that name?
3. What is the distance from Manáos to Iquitos? from Rio de Janeiro to the Federal District? from Belem (Pará) to the Federal District? from Puerto Colombia to Havana?
4. Should the Republic of Panama be included in North America or in South America?
5. Which is the largest state of Brazil? the smallest? (Consult Figs. 288 and 303.)

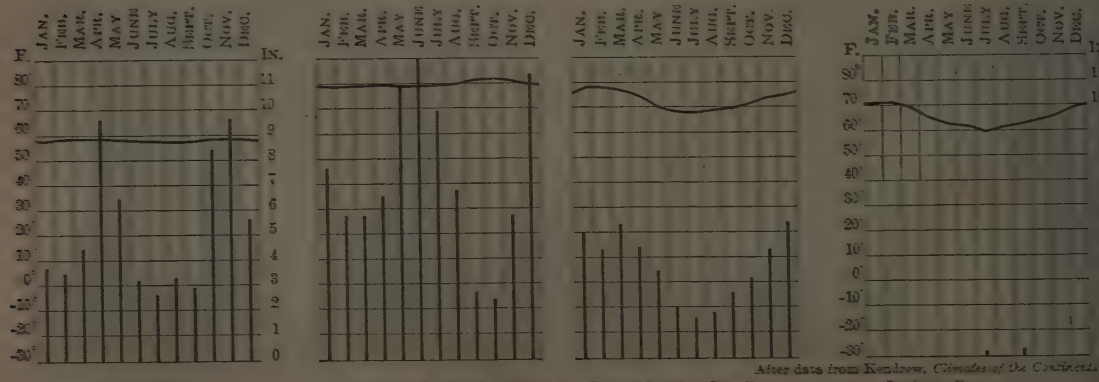

JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT. OCT. NOV. DEC.
F.
IN.
After data from Kendrew, Climates of the Continents
Alt. 8,730 ft. Temp. 57.9°
Rainfall 65.1 in.
Georgetown, British Guiana
Alt. 30 ft. Temp. 79.5°
Rainfall 86.9 in.
Rio de Janeiro, Brazil
Alt. 276 ft. Temp. 72.5°
Rainfall 43.1 in.
Iquique, Peru
Alt. 30 ft. Temp. 66.1°
Rainfall 0.05 in.

FIG. 289. Average annual temperature and rainfall for four cities in northern South America

FIG. 290. Harvesting rice in Brazil. Compare this scene with that shown in Fig. 157. Rice grown here is reaped by hand, and the stalks are beaten on a board until the kernels fall out.

In South America all the farm machinery must be imported, so it is much cheaper to use hand labor. Many of the laborers on the great plantations have large families, and even the younger children are put to work.

In what part of Brazil do you think this rice plantation may be located? Why do conditions in this region especially favor the growing of rice?

110. BRAZIL: THE LARGEST COUNTRY OF SOUTH AMERICA

THE LESSON FORECAST

1. The size and location of Brazil.
2. Why the southern part of the country is farmed by European immigrants.
3. Why Brazil is a great coffee-producing country.
4. How the population is distributed.
6. The location and importance of the leading cities.
5. Problems of the people of Brazil arising from the geography of the country.

Importance of the tropical highland and coastal areas. Brazil, with an area greater than that of the United States, lies almost entirely within the tropics, only the extreme southern part lying without. Not far back from the Atlantic coast, however, rises the Brazilian Highland which is a fine agricultural country with a drier climate in the higher parts. Because of its good soil and moist, warm climate the coastal area from the Amazon southward is devoted to tropical crops, the most valuable being cacao, cotton, tobacco, sugar cane, and rice (Fig. 290). This is one of the leading cacao-producing regions in the world.

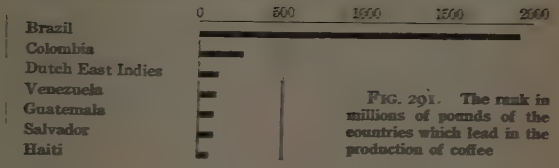


FIG. 291. The rank in millions of pounds of the countries which lead in the production of coffee

Occupations in the southern part of Brazil. Southern Brazil is a grain- and stock-raising region. This section owes its rapid development to immigrants from Europe, especially Germans and Italians, with some French and Poles who in late years have come to Brazil in increasing numbers. Here in this new country they found climate and soil similar to those of their home countries, and their progress, therefore, has been rapid.

Although a country of vast extent, Brazil is usually thought of as a coffee-producing region (Figs. 291 and 292). For over two hundred years coffee has been raised in southern Brazil, but on a large scale only for the last fifty years. The soil of the region is rich and well suited to the coffee plant, the land is well drained, frosts are unknown, and the rainfall comes during the season of rapid growth, while the harvesting season is dry. These conditions are found over a wide area, much of which is not yet tilled, and coffee growing could therefore be greatly increased.

FIG. 292. **A coffee plantation or farmstead in Brazil.** Some Brazil coffee plantations are very large and employ many hundreds of workers. In the foreground on horseback may be seen the manager of this plantation. He makes his home in the house to be seen in the picture.

Note the loaded wagons. What do you think the bags contain? Count the number of mules to each wagon. Does the number tell you anything about the condition of the roads?

Can you find anything in the picture which suggests that this is a tropical region? Try to find out how the coffee in these bags is treated before it finally comes into your home.

Brazil (Fig. 292) produces more than three-fourths of the world's output of coffee. Yet the country must compete with other South American countries as well as with those of Central America which are nearer the markets of the United States.

Brazil has a wealth of valuable resources both in its mines and in its forests. The rubber industry, long a flourishing one, has decreased because of new rubber plantations in Asiatic countries. The Brazilian Highland is rich in minerals, especially iron and manganese ores. Manganese mined in Minas Geraes is exported to this country. High-grade iron ore is also mined in that state. The great distances, however, and the high freight rates make it difficult to carry on mining with profit. Gold is found in all the states, and diamonds have been obtained in Brazil for two hundred years. Diamantina is the center of the chief field (see map, Fig. 288). The tremendous amount of water power which the rivers of Brazil offer is as yet almost untouched.

The people of Brazil and their cities. About 30,000,000 people, more than half of the population of South America, live in Brazil, the most densely populated districts lying near the eastern coast. Most of these people are Portuguese or of Portuguese descent. In several states of southern Brazil, Italians and Germans form a considerable part of the population. The native Indians, thinly scattered through the great Amazon jungle region, supply most of the labor for the rubber industry.

Rio de Janeiro, usually called Rio, is the capital and largest city of Brazil (Fig. 294). Its population is a little larger than that of Detroit. It is beautifully situated on a fine natural harbor, one of the best in the world, and carries on a large trade. Cereals, coal, textiles, and machinery are the chief imports.

São Paulo, the second largest city in Brazil, is well located at such an altitude that its climate is agreeable and healthful. It owes its growth to the fact that it is the natural distributing point for goods needed in the coffee country. Near by is Santos, the greatest coffee-exporting city in the world. These two towns are connected with the coffee-producing regions by short, busy railroads and good highways.

São Salvador (Bahia), the oldest city in Brazil, is an important railroad terminus.

Courtesy Pan American Union

FIG. 293. **The busy river port of Manáos, Brazil.** This city lies far inland on the Rio Negro about six miles above the point where it joins the Amazon River. Can you explain why Manáos is the chief collecting and distributing center for a large region?

In the picture may be seen the floating wharves used here to enable the vessels, which are anchored in deep water, to discharge and receive their cargoes. Between the wharves and the warehouses are cables on which carriers for loading and unloading boats travel back and forth. Try to learn why along this river floating wharves must be used instead of stationary ones.

It leads the country in producing cotton cloth and exports both sugar and cotton. Another port well known for its exports of sugar, cotton, and cacao is Recife. Situated at the eastern point of the continent, it is a port of call for many vessels plying between South America and North America and also between South America and Europe.

At the mouth of the Amazon is Belem, long a principal rubber port, although its exports also include nuts, cacao, and other tropical products. A thousand miles up the Amazon on the Rio Negro, six miles from its entrance into that stream, lies Manáos, (Fig. 293). It can be reached by ocean-going vessels and is the collecting center for a vast area drained by the tributaries of the Amazon.

Problems of the people of Brazil. Brazil is rich in natural resources, but their development has been slow. What the country needs most is a greater number of energetic people with capital to develop these great resources. The country is rich in minerals, but comparatively little mining is done. In the streams are many falls and rapids, but the water power is not used as it might be. There are vast areas well adapted to grazing, but as yet these are not utilized.

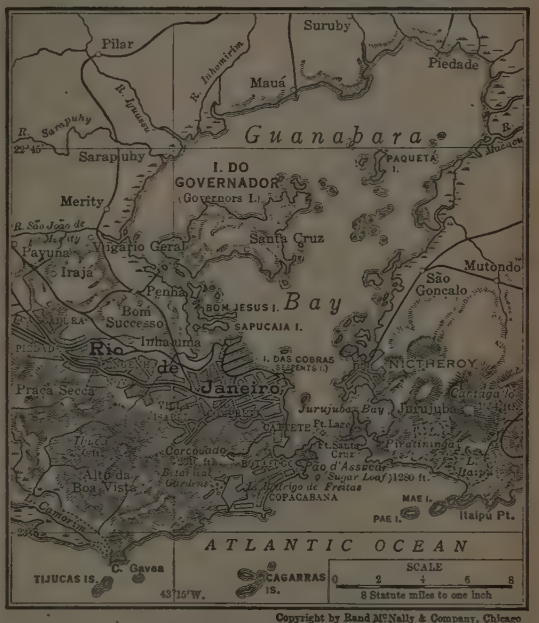


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FIG. 294. **Rio de Janeiro and the surrounding region.** In Guanabara Bay, Rio has one of the world's finest harbors. The entrance to the harbor, less than a mile in width, opens into the bay which is about eighteen miles long and twelve miles wide. Name some products exported from this region.

The great forests of the Amazon lowland are rich in rare woods and other resources which remain practically untouched by man. How to increase the use of these varied riches is one of the problems of the people of Brazil.

Thomas C Lee, from E. Galloway

FIG. 295. **The water front at Maracaibo, Venezuela.** Maracaibo, situated on the west shore of Lake Maracaibo, is the principal shipping port for petroleum from the near-by oil fields. The city is also a distributing center for the products of the prosperous rural communities and small towns in the surrounding region. Both Dutch and American line steamers call here, and there is air service to the oil fields.

The wharves shown here, stacked with freight of all kinds, are only a part of Maracaibo's water front. Find out what manufactured products would be especially needed in this region.

111. VENEZUELA: THE NORTHERNMOST COUNTRY OF SOUTH AMERICA

THE LESSON FORECAST

1. What surface features are included within Venezuela.
2. Why the country has a wet season and a dry season.
3. Why this country raises cattle as well as tropical products.
4. Why the country has developed slowly.
5. The location and importance of the leading cities.
6. Problems of the future development of the country.

Surface and climatic features. Venezuela extends from the Andes on the west across a part of the great lowland and includes within its southeastern portion a part of the Guiana Highlands. Although the climate is everywhere tropical, the higher regions are not so warm as the coastal lowlands. From May to November is the wet season with high temperatures and an abundance of rain. When the rain ceases, vegetation begins to grow rapidly. During the dry season many kinds of plants dry up, especially in the grasslands or llanos.

The industrial and political conditions. The tropical climate and rich soil favor the raising of sugar cane, coffee, cacao, and other hot-country crops. The broad llanos can furnish pasturage for great numbers of grazing animals, but as yet the cattle industry is not as well developed as it might be. Sheep and goats are raised on the llanos and plateaus. Goat skins are exported.

Venezuela today is one of the important petroleum-producing regions, the petroleum fields of Maracaibo Basin being especially rich (Fig. 295). Copper is mined and smelted, and asphalt is exported to the United States.

Like other countries of Latin America, the development of Venezuela has been retarded by frequent revolutions which have kept the people constantly aroused and interested in politics more than in industry. In the last few years, however, great progress has been made in business and in education.

People and cities of Venezuela. Venezuela is a thinly populated country. Most of the people are Spanish or of Spanish descent and are poorly educated because the government has not assisted in maintaining schools. They do not, therefore, know how to improve conditions as do the people of countries where education is more general.

The chief city is Caracas, located in a high valley a few miles from its port, La Guaira,

with which it is connected by a railway and by a good highway (Fig. 288). More than twenty-four miles of track are required, however, to make the climb of only about 3,000 feet. Such a location is more healthful than one on the coastal lowland. Hence many cities in the tropics are found at high altitudes.

From the chief port, La Guaira, coffee, cacao, and sugar are exported, while hides from the llanos are shipped from Ciudad Bolivar on the Orinoco. This city and the country Bolivia are both named in honor of the patriot Simon Bolivar, who was born in Venezuela and who spent his life in attempting to secure independence for the Spanish countries of northern South America. In these countries he is revered as is George Washington in our own country.

Problems of the people of Venezuela. Venezuela has vast forests which are virtually untouched, and it is rich in petroleum. At present the oil fields are being developed by means of foreign capital and the profits are being used to develop roads. Can it be so arranged that the Venezuelans themselves may secure a larger share of the profits from the working of the oil fields? The country is much in need of easy transportation to the interior.

How can Venezuela be made to benefit from its location near the Panama Canal? The great problem, however, upon the solution of which the prosperity and progress of the country depends, is the establishment of a government in which the people's wishes are really represented.

112. THE GUIANAS: COLONIAL SOUTH AMERICA

THE LESSON FORECAST

1. Countries to which the Guianas belong.
2. How the climate and crops compare with those of Venezuela.
3. The character of the people.
4. The cities and trading centers.

The physical features and the development. British, French, and Dutch Guiana, as their names suggest, are colonies of European countries. All these countries extend southward from the hot, moist coastal lowlands across the forested and grass-covered hilly regions to the wild and mountainous Guiana Highlands.

The climate, as in Venezuela, is marked by the regular succession of wet and dry seasons, and the crops grown are therefore similar. British Guiana is the most fully developed of these three colonies. The surplus products of the Guianas are sugar, balata or chicle gum, tropical fruits, cacao, and rice. Fruits, yams, cassava, and corn are the chief food products. Gold is washed from the sands of the streams as in Alaska, and diamonds are mined. The value of the diamonds secured in 1926 was over $3,500,000.

The people and the cities. Besides the British, French, and Dutch immigrants there are in the Guianas many Indians, negroes, and East Indians who carry on the work of the plantations.

The most important city and the chief trading center is Georgetown in British Guiana. Paramaribo in Dutch Guiana, and Cayenne in French Guiana are the chief centers of these colonies. In these three cities live most of the inhabitants of these thinly populated countries.

113. COLOMBIA: CARIBBEAN GATEWAY TO THE ANDES

THE LESSON FORECAST

1. Why Colombia is of special interest to us.
2. How the highland interior is reached.
3. The chief industries.
4. The nature of the foreign trade of Colombia.
5. The location and importance of the leading cities.
6. Problems of the people.

Colombia's location. Colombia lies in the northwest portion of the continent and at

Courtesy U. S. Department of Agriculture

FIG. 296. **On the Magdalena River, Colombia.** The town seen in the picture is the river port of Girardot on the upper Magdalena above the rapids. It is connected by rail with Bogotá and is the last transfer point on the route between Barranquilla and Bogotá (Fig. 288).

This part of the Magdalena can be navigated only by small steamers. Do you think the river was high or low when this picture was taken? The stream varies greatly in depth from season to season. Can you explain why? (Fig. 289.)

one time was of special interest to us because within its borders was included the area now known as the Panama Canal Zone (Fig. 243). Although Colombia lies within the tropics, the Andes, which extend through much of its territory, give it a greater variety of climate than is found in either Venezuela or the Guianas.

Distribution of the surface features and population. The Andes extend in a nearly north and south direction and are divided into several ranges by the valleys of the Magdalena River and its tributaries. These river valleys give Colombia an outlet to the Caribbean and to the great trade routes of the Atlantic (Fig. 296). Because the high valleys have a more healthful climate than the coastal lowlands, they are the most populous parts of the country. These areas lying between the hot, moist lowlands and the cold, barren higher plateaus and mountains are also the most productive portions of the country (Fig. 285).

Products and trade of Colombia. The chief surplus products of Colombia are coffee, bananas, hides, cotton, gold, and platinum. Nearly all the emeralds mined today come from its mines. In Colombia, as in so many tropical countries, manufacturing has not been greatly developed. The surplus products, therefore, are exchanged for the foodstuffs, cotton goods, metals, machinery, tools, automobiles, and the other necessary articles which our own country and other manufacturing countries can supply.

The people and their cities. While the white people form only a small proportion of the population, they make up the governing class. The negroes and Indians do most of the work in the fields and on the plantations.

Bogotá, the capital, has a beautiful situation on a plateau surrounded by imposing mountains (Figs. 286 and 297). It lies at an altitude of about 8,000 feet, far higher than that of Denver, Colo. Because of the high altitude the climate, although cold and dry, is extremely healthful.

Since the delta portion of the Magdalena is not navigable, Barranquilla, located seven miles up from its mouth, has become the northern terminus of river traffic. It is the chief commercial city of the country, its connection with the ocean being through its port, Puerto Colombia. Medellin, a mining city, is the second city in size. Cartagena, long an important port, has lost a large part of its trade because of the silting of the harbor.

Problems of the people of Colombia. The chief route of travel and transportation in Colombia is the Magdalena River (Fig. 296). But in the navigation of this river there are

Courtesy U. S. Department of Agriculture

FIG. 297. **A market in Bogotá, Colombia.** Only a small part of the great market here can be seen in the picture. Much of the buying and selling of fruits and vegetables is carried on by the women.

Although Bogotá lies almost on the Equator, its altitude is so high that only temperate-climate crops can be raised in the surrounding region. Among the vegetables for sale here are the potatoes and green corn so familiar to us. The other vegetables are unfamiliar. They have strange names, but some taste much like parsnips, carrots, or even green-apple sauce.

many handicaps, for there is much silt deposited in its mouth. Throughout much of its course are many falls and rapids. Moreover during a part of the year its waters are so shallow that it is sometimes necessary to load and unload goods thirteen times while transporting them from the sea to Bogotá.

Colombia faces both the Caribbean Sea and the Pacific Ocean and is close to the great interoceanic canal. How is it possible for the country to make better use of its strategic position? Colombia, too, is rich in minerals and forests. How can these resources be used to still greater advantage?

114. ECUADOR: THE EQUATORIAL REPUBLIC

THE LESSON FORECAST

1. The three strikingly contrasted regions of Ecuador.
2. What different sections of the country produce for trade and for home use.
3. Location and importance of the leading cities.
4. Problems of the people of Ecuador.

The striking contrasts found in Ecuador. Within Ecuador, as in the other countries occupying the higher regions of the Andes, are three markedly different sections. Along the coast is a narrow plain which because of its position upon the Equator has a hot, sultry climate. East of this coastal plain are two parallel ranges of the Andean Cordillera. These two high ranges are separated by a well-watered valley, twenty or more miles in width, with an elevation of from 8,000 to 10,000 feet. Here is found a fine agricultural country, and here is Quito, the capital of Ecuador.

The Andes in Ecuador contain many volcanic peaks, some of which are active. As seen from the plains, these mountains, which rise more than three miles above the sea, are indeed magnificent.

The third section, that of the eastern Andes, extends down to the Amazon, the entire region being densely forested, with many streams. Here flourish many kinds of trees which furnish valuable products.

What is produced for maintenance and trade. Ecuador is a small country, its claim to a large area in the south, at present under the government of Peru, being still in dispute. Its population is small, there are no large cities, and as a nation it is poor. Yet the country has many rich resources that in time can be developed. In the lowland areas such tropical products as cacao, coffee, and

rubber are produced. The eastern forests furnish dyewoods, ivory nuts, and cinchona bark, while the highland valleys are devoted to grazing, dairying, and other agricultural occupations suited to the cooler climate.

The leading export products are cacao, ivory nuts or tagua, used in making buttons, coffee, cotton, hides, and Panama hats. The hats woven in Ecuador are called Panama hats because they are shipped across the Isthmus of Panama to market. As in other tropical countries, the imports are largely foodstuffs, machinery and hardware, textiles, and mineral fuel.

The people and the cities. The white people in Ecuador are few in number, but they are the landowners and control the government, as is the case in other tropical countries. The Indians, who are the laborers, form the larger part of the population.

Quito, the capital, is beautifully situated in a high, fertile valley. The chief commercial center, however, is Guayaquil, at the head of the Gulf of Guayaquil (Fig. 288). It is a thriving seaport. Because this city is located in an extremely hot region, it would be most unhealthful were it not kept scrupulously clean and did it not receive an abundant water supply from the near-by mountains.

Problems of the people of Ecuador. Less than one per cent of the land of Ecuador is devoted to the production of cacao. Yet it is the chief surplus product upon which the prosperity of the country depends, for it furnishes about 80 per cent of the country's exports. The cacao industry, however, is threatened by the constantly increasing production of other countries. Can Ecuador continue to prosper unless it raises a number of crops which will yield products for export?

From east to west not a railway or even a highway crosses the great highlands of Ecuador. Moreover, as has already been said, Ecuador's boundaries are in dispute and are a constant source of trouble with its neighbors. These conditions, together with the extreme poverty of the country, keep the people in a constant state of unrest and discontent. What can the people of Ecuador do to improve their condition?

115. PERU: A LAND WITH A ROMANTIC HISTORY

THE LESSON FORECAST

1. Why ancient Peru is so interesting to us.
2. The native home of the potato.
3. How farming in Peru is carried on today.
4. The "camel of the Andes."
5. Products for trade and for home use.
6. The cities, their location and importance.
7. Problems of the present and of the future.

Civilization of the Incas. Peru, because of its early history, is one of the most interesting of the South American countries. When the Spaniards first reached this region, they found it occupied by natives known as the Incas, who had greatly developed the country. They had built large cities, evident in the ruins still to be seen, and were skilled in weaving and in the making of pottery (Fig. 299). They had developed the rich mineral resources of the country and by use of irrigation raised abundant food crops.

Peru, early the center of Spanish influence in South America, was the last country in the continent to throw off Spanish rule.

The surface and climate of the country. Peru, like other Andean countries at the north, has a coastal lowland, a high mountain area with inclosed valleys, and an eastern slope forming a part of the Amazon Basin. The climate is much like that of Ecuador, except in the coastal area. In Peru the prevailing winds are from the east, and hence the coastal area in the lee of the mountains is dry and not moist as in Ecuador. Since, however, many short mountain streams furnish water for irrigation, this dry coastal region is the garden spot of Peru. Sugar cane is the chief agricultural crop,

cotton ranking next. Much rice is raised largely for home use. The chief exports are sugar, cotton, copper, and petroleum. This coastal lowland is the most productive part of Peru, and here are the chief cities and ports.

How the people make a living. In the mountain valleys, even at altitudes of from 6,000 to 10,000 feet, corn and wheat are raised, while potatoes are grown at still greater heights. It is interesting to note that the potato, now so widely grown and used in many temperate countries, was first found among the mountains of Peru.

In the high mountain valleys grazing is also carried on extensively, cattle and sheep being raised in large numbers on the great ranches. But the most interesting domestic animals in Peru are the llama and the alpaca, both of which thrive at a very high altitude. The alpaca is raised for its wool, which forms a valuable export. The llama, also valuable for its wool, is called the "camel of the Andes," for it is much used in carrying goods over the mountains. Since a full-grown llama can carry a load of about a hundred pounds, it is a most useful animal in a country with few good roads.

The cities of Peru. Lima, the capital, is located on the coastal lowland a few miles from the leading port, Callao (Fig. 298). A railroad crossing the Andes at an elevation of about three miles has been built from Lima to the copper mines of the interior. Because of its excellent facilities for handling imports and exports, Lima has become the leading trade center of the country.

Arequipa is located in the Andes on the railroad running from Mollendo, the southern

From the Museum of the University of Pennsylvania

FIG. 299. **An Inca water bottle or aryballus.** The size and decorations of the aryballus suggest that it was for ceremonial use in some temple.

Courtesy Pan American Union

FIG. 298. **Docks and wharves at Callao, Peru.** The harbor at Callao is one of the safest along the entire Pacific coast of South America. Ships from all the leading maritime countries of the world come to anchor in its waters.

Callao is only eight miles distant from Lima and is often spoken of as the "downtown" district of that city. Many of the business men of Callao make their home in Lima (Fig. 288).

Do you see any modern dock machinery in the picture? Upon what industry carried on in the interior of Peru does the prosperity of Callao and Lima depend?

Ewing Galloway

FIG. 300. **A railway station in the Andes of Bolivia.** All this freight, brought here by rail, must be taken to the bismuth mines on the backs of mules or llamas.

Neighboring countries have built railroads which connect them with Bolivia's mineral region (Fig. 288). Argentina has built a road north to the Bolivian border while Chilean roads climb the Andean slopes to the western frontier. A road from Peru leads to Lake Titicaca, and Brazil has pushed lines westward to the Paraguay River, part of Bolivia's eastern boundary (Figs. 283 and 288). What difficulties do you think are encountered in building railroads here?

port of Peru (Fig. 77), to Lake Titicaca on the Bolivian boundary. It is a great wool market, and through it passes much of the export trade from the Lake Titicaca region.

Problems of the people. The agricultural land of Peru is nearly all in the possession of a few influential families—descendants of the early invaders and conquerors of the Incas. The descendants of the Incas are uneducated laborers. Less than one per cent of the land is used to produce about one-half the exports—largely cotton and sugar. Among the many serious problems facing the people are how best to increase the area of irrigated land, how to improve transportation, how to help the people make a better living, and how to pay the national debt.

116. BOLIVIA: A LANDLOCKED COUNTRY

THE LESSON FORECAST

1. The great contrasts in surface features.
2. Why many of the people live at high altitudes.
3. The chief maintenance and surplus products.
4. The people of Bolivia.
5. The location and importance of the leading cities.
6. Problems of the Bolivian people.

The contrast in surface features. More than half of Bolivia lies in the tropical plains of the upper Amazon. The remainder of the country is made up of high mountain ranges with great plateaus lying between them. All the products for export must be carried by rail (Fig. 300) down the steep western slopes of the Andes to the Pacific, or eastward down the long river valleys to the distant Atlantic. Transportation is expensive and only the most valuable products are exported. These include silver, tin, and copper from the highland regions, and rubber and quinine from the eastern slopes of the plateau and the Amazon plains. Only the Malay Peninsula exceeds Bolivia in production of tin (Fig. 457).

Making a living in Bolivia. The Bolivian Plateau has become the political center of the country because it lies near the rich tin mines. The plateau is high, cold, and dry. Wood for building or fuel is scarce, and the climate is so severe only a few hardy grains and vegetables can be grown. The moist, warm valleys of the eastern slopes furnish much of the food and other things used by the plateau people. Products are carried to market chiefly on the backs of animals that can keep their footing on steep mountain trails.

Courtesy Pan American Union

FIG. 301. **The city of La Paz, Bolivia.** In the distance is seen snow-capped Mount Ilimani, towering to a height of more than 21,000 feet. Ilimani, in the Indian language, means "white volcano." The valley in which La Paz lies is more than 12,000 feet above the sea. Near what high lake is the city situated? (Fig. 288.)

Do any conditions seen here show that this city is in a region of high altitude? What do you think is the chief occupation of the inhabitants of La Paz?

In certain parts of Bolivia are found many wild cattle which furnish hides. The llama and the alpaca are also common here as in Peru. Agriculture and grazing are both carried on in a primitive way so that the people receive little profit from the hardest labor.

The people and their cities. Most of the people of Bolivia are either pure-blooded Indians or else of Indian descent. They are poor and uneducated and do most of the heavy work in the mines and fields. Here, as in other South American countries we have studied, the white people are the governing class and the landowners.

La Paz, because of its railroad connections to the Pacific and with the Argentine Republic, is the leading business and trade center (Fig. 301). It is an ancient city with a population of a little more than 100,000. Cochabamba, located on the eastern slope of the high Andes and near a rich agricultural region, is the second city of importance. Potosi, situated at a great height and once one of the chief silver-mining centers of the world, is now famed for its tin mines. Sucre is the official capital, but most of the business of the government is carried on at La Paz.

The problems of the people of Bolivia. Although Bolivia is a large country with great areas of rich agricultural land, because of poor farming methods not enough food is produced for home use. There is almost no fuel in the country, for little coal or petroleum is found there, while the Plateau of Bolivia is so cold and the western slope so dry that trees do not thrive. This lack of fuel is a great handicap particularly in furnishing power for transportation, smelting, or manufacturing. The altitude of the rich tin mines on the plateau is so high that only native Indians can be depended upon to supply the labor. For Bolivia these handicaps, together with the inland position of the country and its great distance from world markets, are most serious problems.

SOME RELATED PROBLEMS

1. Why do foreigners hesitate to invest capital in certain South American countries?
2. Why has Venezuela a wet and a dry season? (Fig. 495.)
3. How does the Panama Canal help the countries lying along the west coast?
4. Why has the Amazon Valley not been developed as have the valleys of the Mississippi and the St. Lawrence?
5. Why is a large part of the Orinoco Valley a grassland and the Amazon Valley forested?
6. Why is it possible that the petroleum of Venezuela will help other nations more than it will those of South America?
7. Why were the highlands of South America developed first rather than the lowlands?

COUNTRIES OF SUBTROPICAL AND OF TEMPERATE SOUTH AMERICA

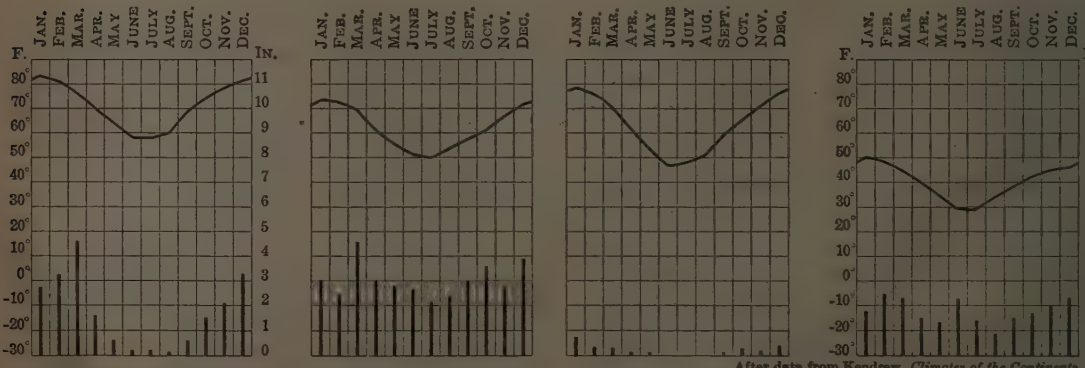
117. WHAT THE MAPS, TABLES, AND GRAPHS SHOW

Problems:

1. Why does temperate South America have a great variety of climate? (*a*) Why is the average annual temperature lower and seasonal extremes of temperature greater at Ushuaia than at Buenos Aires? (Fig. 302.) (*b*) Why would you expect the seasonal temperature at Buenos Aires to be much like that at Wilmington, S. C.? (Figs. 145 and 302.) (*c*) Compare Santiago, Chile, and San Francisco, Calif., as to monthly temperatures. (*d*) Why does the west coast south of 40° S. latitude get more rainfall than the east coast? (Figs. 284 and 495.) (*e*) Why is San Juan, Argentina, drier than Santiago, Chile? (*f*) What city on North America's east coast is in about the same latitude north as Ushuaia is in latitude south? What are the differences in climate between these two places? (Figs. 255 and 302.)
2. What part of South America should have occupations similar to those of Nebraska, Kansas, and Oklahoma? (*a*) Where does this area lie with reference to the Andes? (*b*) About how far from the Equator is the area? (*c*) What kind of surface does it have? (*d*) What is its elevation? (*e*) What are the rainfall conditions? (*f*) Compare the products of the two sections to see if your conclusion is correct. If not, explain why.
3. Why cannot temperate South America ever be as important as temperate North America? (*a*) Compare the area of the two sections. (*b*) Which has the greater area of agricultural lands? (*c*) How do the two areas compare as to distance from present world markets?
4. What handicaps are there to trade between Argentina and Chile? (*a*) How does the height of the Andes compare with that of the Rockies? (*b*) Which range can be more easily crossed by railroads? (*c*) Compare the products of Chile and Argentina. What does this suggest as to possible development of trade between them?

Questions:

1. Which is the largest state of Argentina? the smallest? Which is the largest territory?
2. Through what pass does the Trans-Andean Railway cross the mountains? (Consult Figs. 280, 283, and 303.)
3. Between what two countries is Tierra del Fuego divided?
4. How far are the Falkland Islands from the mainland?
5. What countries border on Argentina?
6. In what rivers are there falls? Do the physical features help to explain these?



After data from Kendrew, *Climates of the Continents*

Santiago del Estero, Argentina
Alt. 659 ft. Temp. 71.1°
Rainfall 20.8 in.

Buenos Aires, Argentina
Alt. 72 ft. Temp. 61.9°
Rainfall 36.5 in.

San Juan, Argentina
Alt. 2,140 ft. Temp. 63.1°
Rainfall 2.5 in.

Ushuaia, Argentina
Alt. 112 ft. Temp. 39.9°
Rainfall 21.5 in.

FIG. 302. **Average annual temperature and rainfall for four cities in southern South America**

FIG. 303. **A Map of Southern South America**

118. THE DISTRIBUTION OF CLIMATIC FEATURES

THE LESSON FORECAST

1. Location of the wind belts and calm belts.
2. Why rainfall differs in these belts.
3. How the Horse Latitudes differ from the Doldrums.
4. How the rainfall differs on the windward and leeward slopes of the southern portion of the continent of South America.
5. A comparison of the climate of the west coast of South America with that of North America.
6. A comparison of the climate of the east coast of South America with that of North America.

The trade-wind and Doldrum belts. Southern South America lies south of the Equator. As one passes from the Equator toward the southern tip of the continent there are the same variations in climate as those found when going north from the Equator. Here, however, the trade winds, instead of blowing from the northeast, as in the Northern Hemisphere, blow from the southeast and bring heavy rainfall to the eastern slopes of the highlands (Figs. 280, 284, and 495). The trades blow over the ocean as well as over the land, being much more constant in their force over the ocean. They begin blowing in about latitude 30° south of the Equator or about one-third of the distance to the South Pole. Here the descending air forms winds that blow toward the Equator as trades, and winds that blow toward the pole. These winds do not blow due north or south, but from the southeast in the case of the trades and from the northwest in the case of the winds in the Temperate Belt.

The atmospheric conditions in the Horse Latitudes. As the light air rises near the Equator, it is cooled and loses its moisture as rain. Where it descends, at about 30° north and 30° south of the Equator, it is again warmed and is therefore dry. These belts of calm, dry air are known as the Horse Latitudes. They were dreaded by the crews of sailing vessels because in these calms a vessel might be delayed for days. The Horse Latitude calms are not so broad or so rainy as are the calms about the Equator in what is known as the Doldrum Belt.

Climatic conditions in the southern portion of the continent. Because in southern South America the winds blow from the Pacific they have to cross the Andes to reach the plains of Argentina. The west coast, therefore, is wet while the region east of the mountains is dry, much like our Great Plains (Fig. 284).

In the extreme southern part of the continent, in the same latitude as that of the northern United States, the westerly winds blow with great strength because they are not turned aside by land features. Here storms are frequent and the sky is usually covered with clouds. Rarely is there bright sunshine and hence few crops can be grown.

The coastal climates of the two Americas compared. We have learned that climate determines largely where people live, what they do, and the crops they can grow. Southern Chile has a climate that changes as one goes southward, just as in our country the climate changes as one goes northward from southern California to Oregon and Washington. On the east or leeward side of the Andes the climate is extremely dry, but as one nears the Atlantic it grows more moist. The eastern part of Argentina and Uruguay have a climate similar to that of the eastern United States. Here are the largest cities and the densest population and here the crops are like those grown in the eastern United States (Figs. 83 and 286).

119. ARGENTINA: THE SECOND COUNTRY IN SIZE OF SOUTH AMERICA

THE LESSON FORECAST

1. The variety of physical conditions.
2. What the subtropical region produces.
3. The location, nature, and importance of the pampas.

Courtesy Pan American Union

FIG. 304. **Looking across Lake Nahuel Huapi, Argentina.** This picturesque lake, seventy-five miles long and ten miles wide, lies on the east slope of the Andes. This region with its many snow-capped peaks, great glaciers, and small, clear lakes is a beautiful vacation land.

Bariloche, the town in the picture, lies at the southeast end of Lake Nahuel Huapi (Fig. 303). From this point many trips may be made by lake steamer or automobile through the beautiful Andean lake region of Argentina and Chile. Shorter trips may be made on foot or by horseback or oxcart. With what regions in our country may this region be compared?

4. Where irrigation is needed.
5. Ways in which Argentina resembles our country.
6. Why manufacturing has not developed in Argentina.
7. The people and where they live.
8. The location and importance of the leading cities.
9. Problems of the Argentine people.

The size and extent of the country. The Argentine Republic—Argentina as it is quite commonly called—as large as that part of the United States east of the Mississippi, stretches from the warm, moist subtropical northern areas southward to the cold, bleak lands of Patagonia (Figs. 59 and Appendix, 496), and from the high crest of the lofty Andes to the Atlantic. Through most of the country the slopes are gentle, and where the climate is favorable agriculture and grazing are carried on successfully.

The importance of agriculture. In the northern subtropical sections the forest products are of great value, while in the grassland areas much cotton, sugar, and tobacco are raised. Upon these grasslands, as upon the llanos of Venezuela, graze the wild cattle so valuable for their hides.

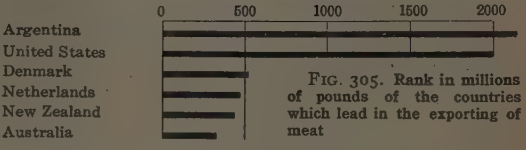


FIG. 305. **Rank in millions of pounds of the countries which lead in the exporting of meat**

Practically three-fourths of Argentina's land is cultivable, but in the pampas, as the eastern plains are called, is found the most valuable land. Here in this flat country extending nearly 700 miles westward from the Atlantic is one of the richest farming regions in the world. And here also is one of the great wheat and cattle regions of the world. In early days the cattle were mostly wild animals and were slaughtered either for their hides or for the manufacture of extract of beef. Alfalfa is now grown in great quantities to feed the cattle, and today fine breeds have taken the place of the wild cattle. As a result the Argentine Republic excels the United States as a meat-exporting country (Figs. 305 and 487).

The area under corn is now about one-half that under wheat, and today Argentina exports more corn than the United States.

Farther south, where the climate is colder and more moist, sheep are raised in such

Courtesy Pan American Union

FIG. 306. **Some of the wharves and grain elevators at Buenos Aires.** No other port in the world has finer facilities for milling, storing, and exporting grain than that of Buenos Aires. Try to find out where most of the grain goes. Argentina is a great wheat-growing state. What is its rank among the wheat-growing states of the world? Can you explain why so much newly occupied land in Argentina has been easily turned into grain fields? (Figs. 280, 285, 303.)

great numbers that the Argentine Republic ranks next to Australia as a wool-exporting country (Fig. 487).

In the western areas lying near the Andes the climate is so dry that irrigation is practiced in many sections. Grapes for making wine are produced here in large quantities, but the wine is almost all used in the home country.

Thus, in its products, as in its climate, Argentina, with its wheat (Fig. 306), its cattle, its sheep, and its subtropical crops, reminds us in many ways of our own country.

The importance of manufacturing. In new countries manufacturing is not established until after certain other industries such as grazing and agriculture have been developed. Because for the Argentine Republic it has been easy to find markets for its surplus wheat, wool, and meat, and also because it is poor in coal, its progress in manufacturing has been slow. Now, however, a number of manufacturing industries based mostly upon the near-by supplies of raw materials are being developed. Important among these industries is flour milling which ranks second only to meat packing. Practically all of the goods manufactured in Argentina are used locally.

The people and the cities. A large proportion of the people of Argentina belong either to the Spanish or to the Italian stock, and Spanish is the national language. In fact there are but few people living in the country who are not Europeans or the descendants of Europeans. The immigrants that come into the country each year in increasing numbers are mostly all from southern Europe.

More than one-fourth of the inhabitants live in Buenos Aires, the largest and one of the finest cities in the Southern Hemisphere. This beautiful modern city is situated on the estuary of the Rio de la Plata (Fig. 307). Not only is Buenos Aires the largest city in the continent of South America, but in its export trade it ranks high among all the ports in the Western Hemisphere (Fig. 306). There is a large university in this city which is a general center of culture and art.

Rosario, the second city in size, is located on the Paraná and is the outlet for the products from the northern part of the country. It has excellent rail connections with the agricultural regions and exports a great deal of grain.

Bahia Blanca is the port through which are sent the products from the southern pampas. Mendoza, located upon the railroad to Valparaiso, Chile, is the chief city of the inland region.

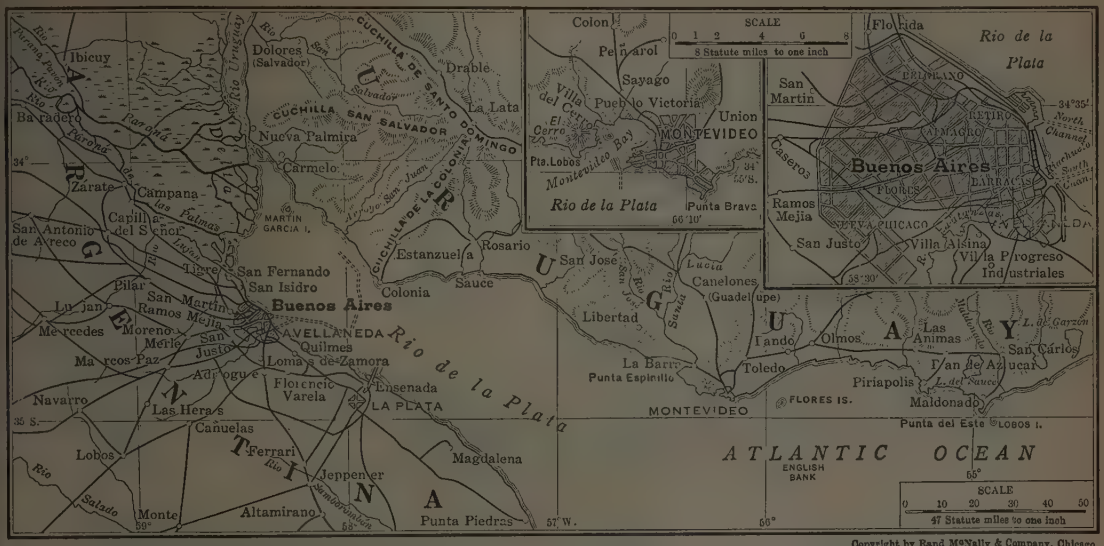


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FIG. 307. **The La Plata Basin and its two great cities, Buenos Aires, and Montevideo.** Montevideo, Uruguay, with its fine harbor lies much nearer the ocean than Buenos Aires, Argentina, the chief city of the basin. How far apart are the two cities? Consult the map and use your scale. The La Plata has the widest mouth of any river in the world. Find out its greatest width.

Problems of the people. Until the people of Argentina can find some easily available source of power for manufacturing, they must depend almost entirely upon other countries for manufactured goods.

Eastern Argentina is covered with a network of railroads that carry a large amount of freight. The Paraná River is navigable for 1,700 miles. Thus this section of the country can easily develop its resources. Western Argentina has no rivers and but few railroads. Hence its development is slow, as was that of our Great Plains states before railroads were built. Argentina, growing rapidly in population and in wealth, still has great areas to be developed. This explains why large numbers of people from southern Europe emigrate each year to this new country.

One of the most difficult problems facing the people of Argentina arises from the location and size of the country. All surplus products must be carried great distances to market, and imports of manufactured goods must be brought long distances. What can the people do to overcome these handicaps?

120. CHILE: THE CALIFORNIA OF SOUTH AMERICA

THE LESSON FORECAST

1. Why Chile has such a variety of products.
2. Why the northern part of Chile is especially important.
3. In what way the central part of Chile resembles California.
4. Reasons for the importance of southern Chile.
5. How trade is carried on between Chile and Argentina.
6. The location and importance of the leading cities.
7. Problems of the people of Chile.

The location and shape of the country. Chile stretches along the Pacific coast for a distance of 2,600 miles but is in no place much over 100 miles in width. It is closed in by the high wall of the Andes and by the sea. The northern region is a desert while the southern islands are cold and wet. Because of its great length and variation in altitude, Chile can produce a variety of crops, although only in the central part of the country is agriculture a flourishing

Courtesy U. S. Bureau of Foreign and Domestic Commerce

FIG. 309. **A new method of transportation in the nitrate region.** In recent years motor trucks have been used more and more in the Chilean nitrate region for transporting nitrate rock. A motor truck can go almost everywhere a mule cart can go. When a truck is not in use there is very little overhead expense. It costs much more here to keep a large number of mules and drivers when work is slack.

What must now be imported into this region in addition to hay and corn? Does the success of the nitrate industry here depend upon lack of rainfall? Explain your answer.

Publishers Photo Service

FIG. 308. **Loading copper ingots at the Antofagasta docks, Chile.** Locate Antofagasta (Fig. 303). Consult your dictionary for the meaning of ingots. Why do you think ingots are shipped instead of copper ore? Is this a dry country? (Fig. 284.) Find out how water is brought to the city.

industry. The chief products are fruits, wheat, which thrives in a cool climate, barley, and oats.

The mines of the desert region. In the dry northern section are great deposits of nitrate of soda found at altitudes ranging from 4,000 to 9,000 feet (Fig. 309). This nitrate is used in many ways, especially in the making of fertilizer and explosives. In spite of the difficulties people find in living in this cold desert region, nitrates are mined here in such quantities that they make up more than one-half the exports of the country. Chile ranks next to the United States in its production of copper, which is also found in this northern region (Figs. 308 and Appendix, 506). Iron, coal, gold, and silver are also mined, but there is not enough coal to meet the country's needs.

Chile compared with California. Central Chile is in many ways much like California. In each, coast ranges border the ocean, while between these ranges and the great eastern highland lies the central valley. In Chile, as in California, irrigation is practiced on a large scale, particularly in the areas where wine-making grapes are produced.

The cool, wet region of the south. In southern Chile there are extensive forests as well as grazing regions. The products of the forests are used mostly at home. The grazing carried on here is devoted chiefly to great flocks of sheep, the products of which form the fourth largest export of the country, ranking next to nitrate, copper, and iodine.

The people and the cities. Most of the people of Chile belong to the white race, but here as in several other countries of South America are many native Indians. Most of the people live in the Chilean Valley, and here is Santiago, the capital of the country

Publishers Photo Service

FIG. 310. **A highway in the Chilean Valley.** This view was taken near Los Andes (Fig. 303). The oxen are hauling loads of baled hay or alfalfa. Note that beside their yokes the oxen have no harness. How do they pull the load? Does the use of ox teams for transportation tell you anything about the lack of progress in this region?

To what parts of Chile do you think hay must be sent? Why is it no longer necessary to send so much hay to the nitrate fields of northern Chile? Find out near what large cities Los Andes is located (Fig. 303).

and its largest city (Fig. 303). It is connected by rail with its port, Valparaiso, and with Buenos Aires by a railroad which is notable because of the great height at which it crosses the Andes.

Because of the mountain wall which shuts it off, most of the trade of Chile is carried on by water either from Valparaiso or from Antofagasta and Iquique, the nitrate and copper ports of the north. Magallanes (Punta Arenas) (Fig. 303), the most southerly city in the world, is a shipping port and fueling station on the Strait of Magellan.

Problems of the people. The long distance that both imports and exports must be transported to reach a market is a problem of great concern to the people of Chile. Another problem is found in the fact that the Andes are so high that trade with nations on the eastern coast of the continent is difficult. The interests in the nitrate deposits have been and still are a source of discord with Chile's neighbors on the northern border. Moreover, the perfection of an electrical process for making nitrates promises to decrease the market for the natural nitrates of Chile. If this should happen it would reduce the large revenues now coming to the government from the export tax.

121. URUGUAY: A GRAZING COUNTRY

THE LESSON FORECAST

1. The location of Uruguay.
2. Why Uruguay is a grazing country.
3. Why Montevideo has grown to be a large city.
4. Problems of the people.

Why Uruguay is a ranching country. Uruguay, although it has a smaller area than any other South American country, is one of the most progressive nations of the continent. Occupying a part of the plain that borders the Rio Plata and extending up into hills along the Brazilian border, it is everywhere a good grazing country. The climate is warm, the growing season is long, and the rainfall is so evenly distributed that dry periods are infrequent.

Because of these favorable conditions and also because the people enjoy the life of a rancher, Uruguay is almost entirely devoted to the raising of cattle and sheep. Most of the cattle and many of the sheep are slaughtered, and shipped in refrigerator steamers principally to the United Kingdom. Meat products, wool, and hides are the chief exports (Figs. 311 and 312). Wheat, corn, and linseed are also exported. Among the imports are fuels, lumber, and foodstuffs.

Courtesy Pan American Union

FIG. 311. **The stockyards of a large packing plant at Montevideo.** Uruguay has made rapid advance in the breeding of high-grade cattle. Can you tell the breed of the cattle shown in the picture?

Better herds of cattle has meant the fencing of the ranges and the improving of the pasturage and the water supply. As a result the country is exporting more and more chilled and frozen beef. Meat and meat products are shipped in larger quantities to the United Kingdom than to the United States. Can you explain why?

The people and their capital. The people of Uruguay are nearly all of European descent and, as in the Argentine Republic, have come mostly from southern Europe. The population is increasing rapidly. While a large part of the land is suitable for farming and manufacturing is being encouraged, as yet little agriculture and manufacturing, except meat packing, are carried on.

Montevideo, the capital and chief city, contains very nearly one-fourth of the total population. It is beautifully situated on the wide estuary of the river Plate and lies nearer the ocean than the larger city of Buenos Aires, Argentina (Fig. 307). The railroads of Uruguay are centered in the city of Montevideo, and through it passes most of the trade of the country.

Problems of the people. The mild, even climate of Uruguay makes it an excellent winter resort for people from farther south and a pleasant summer resort for those living farther north. Its central location on the east coast of South America is a distinct advantage. Its rich soil and plentiful supply of rainfall would make possible agriculture on a much larger scale than is now practiced. How to take greater advantage of these favorable conditions is a problem of great interest to the people of Uruguay.

122. PARAGUAY: A RIVER COUNTRY

THE LESSON FORECAST

1. The position of the country.
2. Crops that thrive in this region.
3. The people, their capital, and their problems.

The natural divisions of the country. Paraguay, like Bolivia, is an interior country. It is bordered on the north by both Bolivia and Brazil. On all other sides it is separated from Brazil and Argentina by the Paraná and Pilcomayo rivers. It is naturally divided into two sections, the higher forested lands in the east and north, and the plains drained by the Paraguay and its branches.

The activities of the people. The greater part of the population is found in the plain east of the Paraguay where most of the agriculture is carried on. Here both climate and soils favor the growing of tobacco, cotton, rice, coffee, sugar, and crops similar to those found in the southern part of the United States. Agriculture, however, is so little developed that Paraguay raises hardly enough food for its needs. Orange groves are increasing in number and more and more oranges are being exported to other South American countries. Another crop peculiar to parts of the plains is a shrub, yerba-maté, which yields a leaf that is used

Courtesy Pan American Union

Fig. 312. Drying hides in Uruguay. In colonial days the wild horses and cattle which roamed the rolling hills of Uruguay were hunted for their skins. Transportation was then uncertain, and the hides and skins, salted and dried, could be held for months. Today the production of hides and skins is dependent upon the meat-packing industry.

Try to find out the different steps in the making of hides into leather. Make a list of as many articles as you can think of that are made from the hides of cattle. The manufacture of woolen and leather goods is increasing in and around the city of Montevideo. Can you tell why?

as we use tea. Chief among the exports are quebracho or tannin extract, used in the manufacture of leather, beef products, yerba-maté, and tobacco. Paraguay imports textiles, foodstuffs, iron and steel, and machinery.

Asuncion, situated on the Paraguay River, 1,000 miles from the sea, is the capital and the leading trade center.

Problems of the people. All the foreign trade of Paraguay must pass through Argentina, in which there is no market for the products of the country. Other markets are so far away and transportation is so expensive that trade is almost impossible. Is there any possible solution of this problem?

123. THE ISLANDS OF THE SOUTHERN COAST

THE LESSON FORECAST

1. The occupations of the Falkland Islands.
2. The location of Tierra del Fuego.

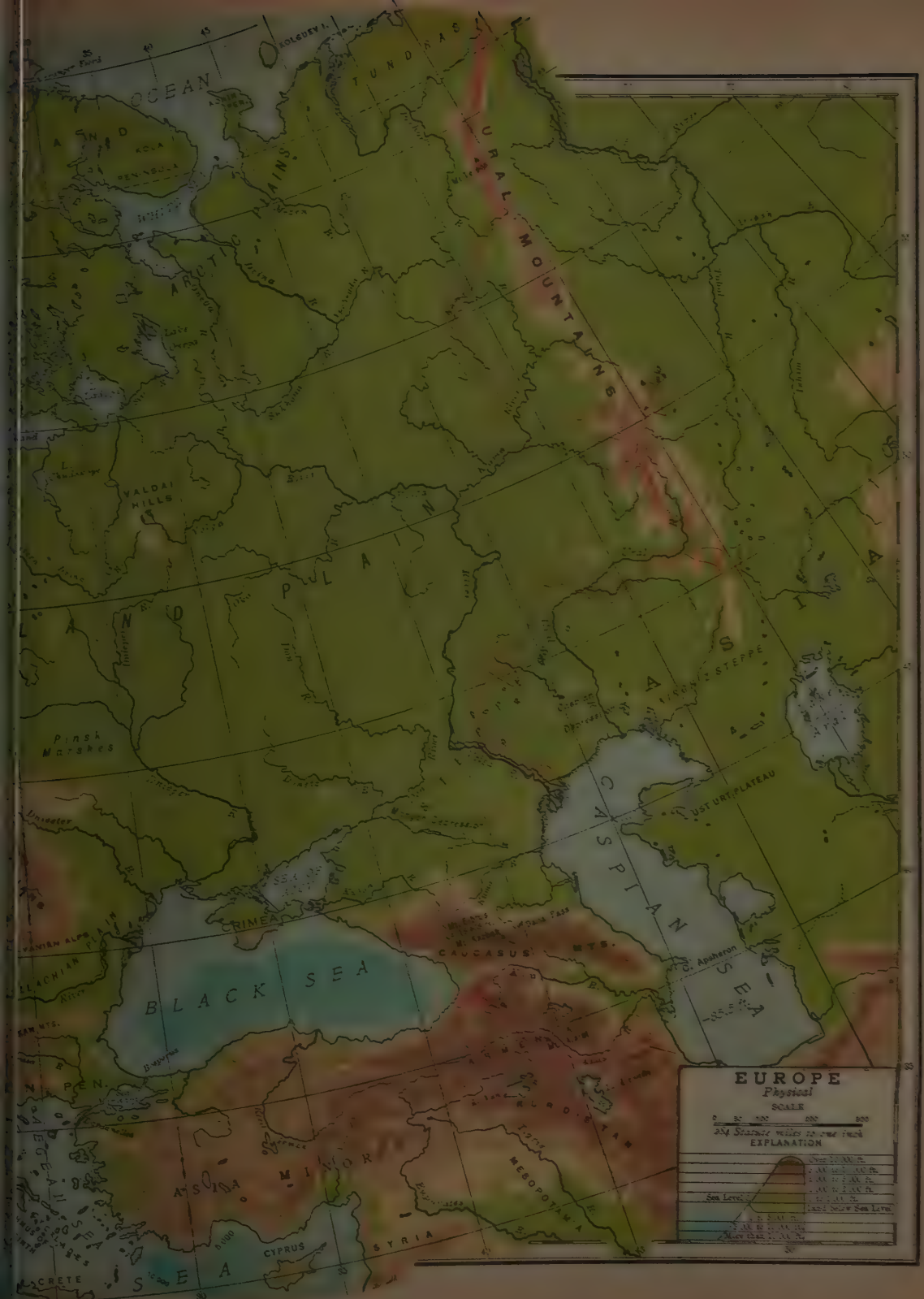
The Falkland Islands and Tierra del Fuego. The Falkland Islands, a colony of the British Empire, lie about three hundred miles east of the Strait of Magellan in a region of steady winds, stormy skies, and cold temperatures. Because of the cold, damp climate, grass and a few vegetables are the only crops, and the raising of cattle and sheep is the leading occupation of the people. Wool and whale oil are exported. The imports are foods, fuel, hardware, and textiles.

Tierra del Fuego, the most southern region in the world that is occupied, lies between the Strait of Magellan and Cape Horn. Before the building of the Panama Canal, all vessels except steamers sailing between the Atlantic and Pacific had to go around Cape Horn, dreaded for its storms, its strong winds, and the rough seas around it. Because of the cold, damp climate the only occupation of the people of the islands is cattle raising.

SOME RELATED PROBLEMS

1. Why do most of the European immigrants to South America go to the southern part of the continent?
2. Compare the width of North America with that of South America through the 40th and 50th parallels.
3. Why some day may much of the grazing land of Uruguay be used for farming?
4. Why would it not be profitable for Paraguay to ship oranges to the United States?
5. How have refrigerator ships increased the prosperity of South American countries?
6. In what ways would more manufacturing in South America benefit the people?
7. How does a lack of coal in South America hinder the development of the countries?

ICELAND
Mt. Hecla
Volc.
ARCTIC
Arctic Circle
LOFOTEN IS.
Mt. Kebnekaise
ATLANTIC OCEAN
THE FAEROE IS.
Meridian of Greenwich
SHETLAND IS.
ORKNEY IS.
HEBRIDES
Moray Firth
GRAMPIANS
GREAT BRITAIN
NORTH SEA
IRELAND
Mt. Galdhopiggen
DOVRE FIELD
The Naze
Skagerrak
GOTTLAND
OLAND
BALTIC SEA
HELGOLAND
RÜGEN
C. Clear
St. George's Chan.
Lands End
English Channel
CHANNEL IS.
BAY OF BISCAY
C. Finisterre
PLAIN OF FRANCE
CENTRAL UPLAND
SUDETES
HUNGARIAN PLAIN
CANTABRIAN MTS.
IBERIAN
PYRENEES
Mont Blanc
ALPS
PLAIN OF LOMBARDY
ADRIATIC SEA
DINARIC ALPS
Gulf of Genoa
C. Corso
CORSICA
APENNINES
ITALIAN PEN.
IBERIAN PENINSULA
PLATEAU
BALEARIC IS.
SARDINIA
Mt. Vesuvius
C. St. Vincent
Straits of Gibraltar
SIERRA NEVADA
C. St. Martin
C. Spartivento
MEDITERRANEAN
SICILY
Mt. Etna
C. Bon
C. Passaro
MALTA
AFRICA
Latitude North
Longitude West from Greenwich
Longitude East of Greenwich


EUROPE
Physical
SCALE
EXPLANATION
ARCTIC OCEAN
KOLGUEV I.
TUNDRAS
KOLA PENINSULA
URAL MOUNTAINS
VALDAI HILLS
PLAIN
Pinsk Marshes
STEPPE
USTURT PLATEAU
CASPIAN SEA
CRIMEA
CAUCASUS MTS.
C. Apsheron
BLACK SEA
ASIA MINOR
MESOPOTAMIA
SYRIA
CYPRUS
CRETE
SEA

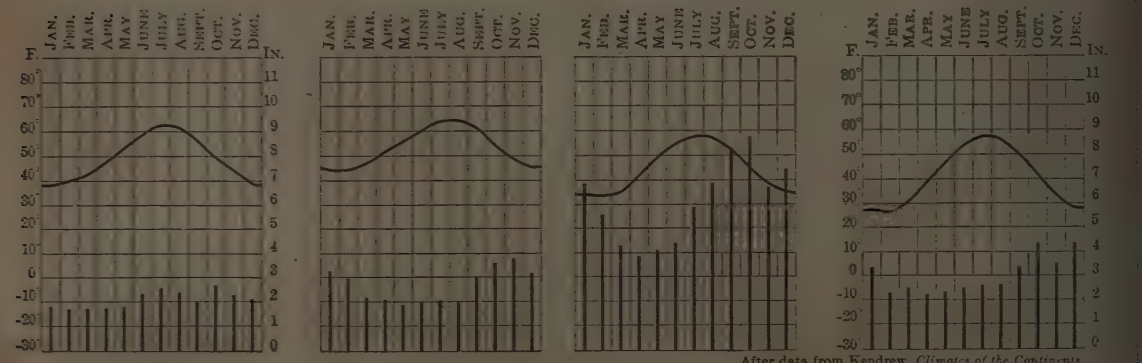
of Europe

EUROPE

124. WHAT THE MAPS, TABLES, AND GRAPHS SHOW

Problems:

1. Compare the continents of Europe and North America as to location and size. (*a*) Through what eastern city of the United States and what countries of Europe does the 40th parallel pass? (Figs. 89 and 315.) (*b*) What parallel forms part of the northern boundary of the United States, and through what European countries does it pass? (*c*) What countries of Europe are mostly north of the parallel that touches southern Greenland and southern Alaska? (Figs. 254 and 315.) (*d*) How many degrees east of the prime meridian are the Ural Mountains? What island on the North American coast is about the same number of degrees west of the prime meridian? (*e*) Using the map scale, compare the size of the United States with that of Canada and Europe. Verify from the Appendix.
2. How does the climate of Europe compare with that of Canada? (*a*) Compare the temperature by months at København (Copenhagen) and Hebron; at Dawson and Arkhangel'sk (Archangel) (Figs. 255 and 366); at London and Calgary (Figs. 255 and 314); at Bordeaux and Halifax (Figs. 255 and 324). (*b*) Compare the summer and winter rainfall of the cities named. (*c*) The regions in which these cities lie are in the belt of westerly winds (Appendix, Fig. 495). Which can profit the more from moisture carried by these winds? Why?
3. How do England, France, Germany, and Italy compare with certain states of the United States in size and population? (*a*) Write the names of the following countries in a column and after each its area and population: England, France, Germany, Italy. (*b*) Opposite in a parallel column, write the name of a state of our country that is nearly the same size as each country named. After each state write its area and population (use Appendix). (*c*) If your state had as many people per square mile as Belgium, what would be its population? (*d*) What countries in Europe are most densely populated? (*e*) What states in the United States?
4. How does the physical map help to explain why there are many countries in Europe? (Fig. 313.) (*a*) Name the physical boundaries of the United Kingdom. (*b*) What physical boundaries separate Spain and Italy from adjacent countries? (*c*) What are the boundaries of Norway and of Sweden? (*d*) Which seem to serve more often as boundaries in Europe, highlands or rivers? Why do highlands afford better protection than rivers?



After data from Kendrew, *Climates of the Continents*

London, England
Alt. 15 ft. Temp. 49.5°
Rainfall 25.1 in.

Brest, France
Alt. 184 ft. Temp. 53°
Rainfall 32.4 in.

Bergen, Norway
Alt. 66 ft. Temp. 44.6°
Rainfall 73.1 in.

Nidaros (Trondhjem), Norway
Alt. 33 ft. Temp. 40.5°
Rainfall 35.7 in.

FIG. 314. **Average annual temperature and rainfall for four cities of northwestern Europe**

5. What physical boundaries separate Europe from Asia? Europe from Africa? (*a*) What two political divisions extend from Europe into Asia? (*b*) What European countries own colonies in northern Africa? (*c*) What countries own the various islands off the coasts of Europe?

THE CONTINENT MOST CLOSELY ASSOCIATED WITH OURS

125. POSITION AND DEVELOPMENT OF EUROPE

THE LESSON FORECAST

1. How its central position among other continents proves of benefit to Europe.
2. Why southern Europe was formerly important commercially.
3. Why western Europe is now more important commercially.
4. How the development of our country has been similar to and yet different from that of Europe.
5. Why European colonists at first found it difficult to raise crops in America.

The position of Europe as related to its development. Europe, as may be seen by looking at a globe, lies at the center of the Eastern Land Hemisphere. Today all continents of the world are known and occupied, and all of them enter into trade with one another. Europe, therefore, because of its position, is better located than any other continent for carrying on a world-wide trade. Before America was discovered and developed, all European trade was carried on with Asia and northern Africa.

Western Europe, now the home of a number of great commercial nations, was in very early days the western edge of the known world, and its trade with other regions was small. For a long time, therefore, the commercial nations of Europe were all located in southern Europe, and trade with Asia was carried on over the Mediterranean or by land routes.

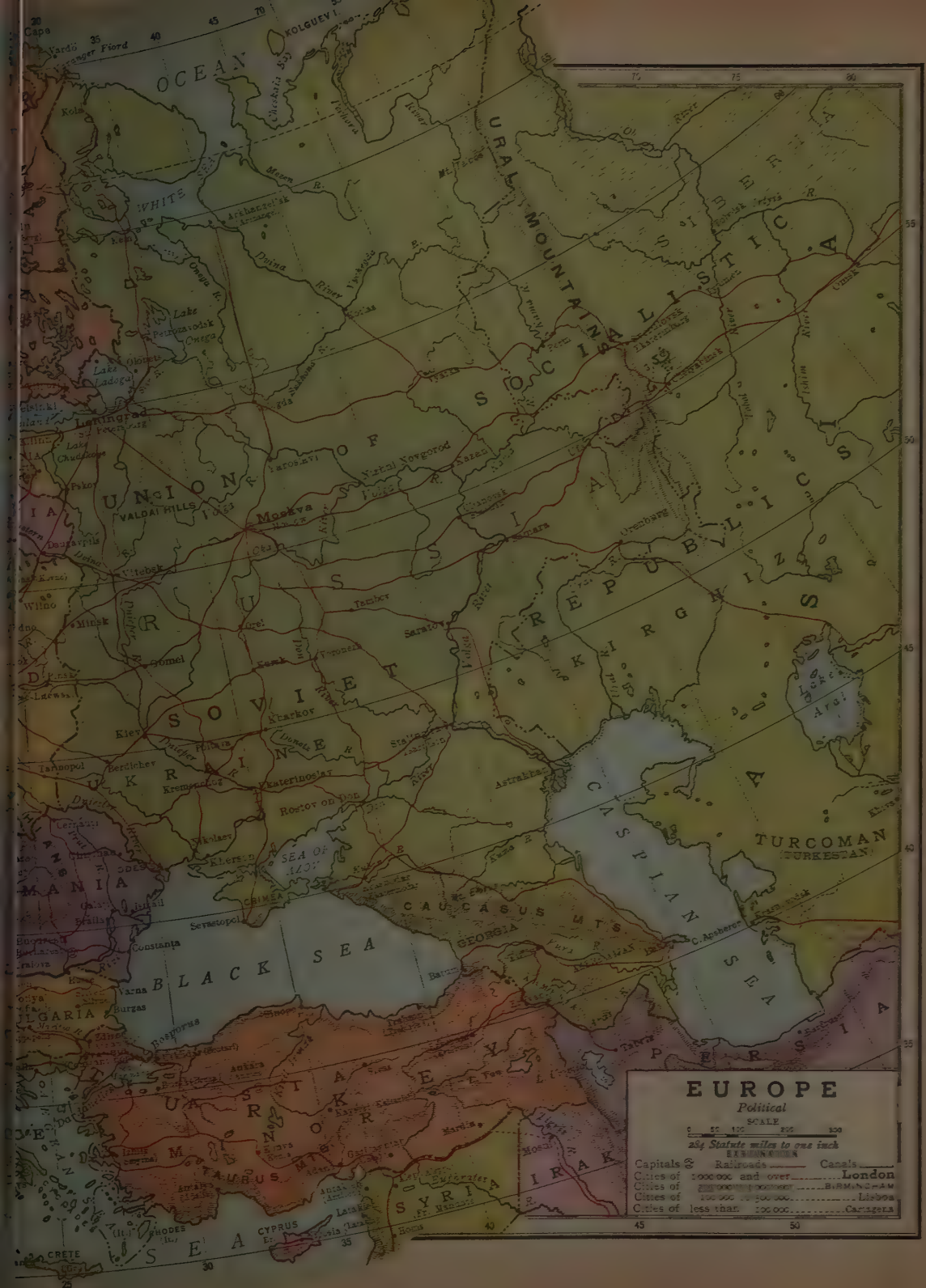
Development of Europe as contrasted with that of America. The development of western Europe has been due in part to the many favorable conditions found there. It has also been largely due to the people who have known so well how to make use of the natural resources of the region. The history of Europe has been similar to that of our own country. At first the people depended for a living largely upon hunting, fishing, and agriculture. Later they became skilled in manufacturing and engaged in trade with neighboring nations and then with nations of other continents.

Europe, though similar in many ways to America, has a long history, while America's first settlement was made only a little over three centuries ago. The first settlers in this country came from Europe.

Europe is therefore the country of our ancestors as well as the country of those people who opened and developed many of the more favorable portions of every continent.

The difficulties of early European settlers in America. The early colonists who came from Europe to America found many conditions similar to those of the home country. The coast they reached had many good harbors. The grasses and some of the trees were familiar, and the soils were similar to those of western Europe, but the climate was very different. The early settlers therefore made a mistake in trying to raise the food crops they had grown at home. Most of the colonists had come from countries with a climate similar to that of our western coast, with long summers and warm winters. These colonists landed on our eastern coast where summers are short and winters cold. Had not the Indians shown them how to plant crops that would grow in such a climate and furnished them with food, these early settlers would have found it much more difficult to establish the settlements from which has grown the great nation we are today.

ARCTIC
OCEAN
ATLANTIC
Arctic Circle
ICELAND
THE FAEROES
LOFOTEN IS.
SWEDEN
NORWAY
SHETLAND IS.
ORKNEY IS.
HEBRIDES
Meridian of Greenwich
Sognefjord
Bergen
Stavanger
Skagerrak
Stockholm
Göteborg
Aberdeen
Dundee
Edinburgh
Glasgow
Newcastle
Hull
NORTH SEA
DENMARK
Königsberg
IRELAND
GREAT BRITAIN
Cape Clear
St. Georges Channel
Lands End
English Channel
CHANNEL IS.
HELGOLAND
Hamburg
Berlin
Hannover
Amsterdam
London
Paris
Nantes
Strasbourg
Wien
FRANCE
Gironde R.
BAY OF BISCAY
C. Finisterre
Coruña
Santander
Bilbao
Oporto
Lisbon
Toulouse
PYRENEES
Nice
Genoa
Venezia
Trieste
Zagreb
Beograd
HUNGARY
YUGOSLAVIA
Marseilles
Toulon
Livorno
Firenze
Roma
ITALY
CORSICA (Fr.)
ELBA
Ajaccio
BARCELONA
Valencia
BALEARIC IS. (Sp.)
Palma
MAJORCA
SARDINIA (It.)
C. St. Vincent
Strait of Gibraltar
Cadiz
Granada
Sierra Nevada
Malaga
Gibraltar (Br.)
Tangier
Ceuta
Cartagena
Cagliari
MEDITERRANEAN SEA
Palermo
Messina
SICILY
Catania
C. Passaro
Algiers
Oran
Casablanca
Rabat
MOROCCO
ALGERIA
Constantine
Tunis
TUNISIA
C. Bon
MALTA (Br.)
Longitude West 5 of Greenwich
0
Longitude East 5 of Greenwich
Latitude North
60
55
50
45
40
35
30
25
20
15
10
5
0
5
10
15
20


EUROPE
Political
SCALE
284 Statute miles to one inch
Capitals
Railroads
Canals
Cities of 1000000 and over
London
Cities of
BIRMINGHAM
Cities of
Lisbon
Cities of less than 100000
Cartagena
OCEAN
ARCTIC
WHITE SEA
BARENTS SEA
KOLGUEV I.
Kola
Archangel
Onega R.
Lake Onega
Lake Ladoga
Leningrad
Lake Chudskoye
Pskov
Moskva
VALDAI HILLS
Yaroslavl
Nizhni Novgorod
Kazan
Vitebsk
Minsk
Gomel
Tambov
Saratov
Orenburg
Kharkov
Kiev
Voronezh
Stalingrad
Lake Aral
Tarnopol
Berdichev
Ekaterinoslav
Rostov on Don
Astrakhan
Dniester R.
Dnieper R.
Dniester
Lemberg
Kherson
SEA OF AZOV
CRIMEA
Sevastopol
Constanta
Varna
Burgas
BLACK SEA
Bosporus
CAUCASUS MTS.
GEORGIA
C. Apsheron
CASPIAN SEA
TURCOMAN (TURKESTAN)
PERSIA
Taurus Mts.
Adana
Aleppo
Homs
Latakia
Tripoli
Beirut
Haifa
Jaffa
Gaza
Jerusalem
Amman
Mosul
IRAK
SYRIA
CYPRUS
RHODES
CRETE
MEDITERRANEAN SEA
Ural Mountains
Ural R.
Caspian Sea
Aral Sea
Lake Balkhash
Tashkent
Frunze
Issyk-Kul
Semipalatinsk
Omsk
Tobolsk
Petropavlovsk
Chelyabinsk
Sverdlovsk
Perm
Kotlas
Vyatka
Kama R.
Volga R.
Don R.
Dnieper R.
Pripet R.
Western Dvina R.
Northern Dvina R.
Onega R.
Mezen R.
Pechora R.
Ob R.
Irtysh R.
Yenisei R.
Lena R.
Amur R.
Syr Darya R.
Amu Darya R.
Tigris R.
Euphrates R.
Jordan R.
Kuma R.
Terek R.
Kura R.
Araks R.
Rioni R.
Chorokh R.
Kizil Irmak R.
Sakarya R.
Maritsa R.
Struma R.
Vardo
Varanger Fjord
SOVIET SOCIALIST REPUBLICS
UNION OF
RUSSIA
UKRAINE
KIRGHIZ SSR
RUMANIA
BULGARIA
TURKEY
ASIA MINOR
ANATOLIA
ARMENIA
KURDISTAN
MESOPOTAMIA
ARABIA
PERSIA

ap of Europe

FIG. 316. **A magnificent view in the Alps.** The mountain-encircled valley seen in the picture lies in the region known as the Tirol, now a part of Italy. On the floor of the valley notice the small village with its cultivated fields weaned from the forest. Would this be a pleasant place for a summer outing? Would a highway among these mountains have many windings?

126. THE SURFACE FEATURES OF EUROPE AND AMERICA

THE LESSON FORECAST

1. Surface features of those portions of North America that were settled earliest by colonists from the countries of northern Europe.
2. Direction and location of the great surface features of Europe as contrasted with those of North America.
3. How the distribution of surface features affects the rainfall on the west coasts of the two continents.
4. Why the Great Highland of Europe is well known.
5. Special features of the Lesser Highland of Europe.
6. Why the Great Lowland Plain of Europe is important.
7. The location of the Central Upland and its resources.

The surface features of Europe compared with those of North America. The earliest settlers from Europe came to New England or to Virginia. In either case they found a lowland with gentle slopes bordering the sea, and an irregular coast line with many good harbors, conditions like those of the home regions. It was not until many years later that people came to know of the two great highlands and the inclosed central plain.

Europe, like North America, has two highlands and a central plain (Fig. 313). But in Europe the greater highland and the plain extend in an east-west direction and not north and south, as in our continent. Thus the westerly winds can sweep far inland in Europe, while on our western coast they quickly strike the sides of our western mountains, causing heavy rainfall. East of the mountains the climate is very dry. In

Europe, because there is no mountain barrier, moisture from the western ocean is carried by the winds over a large part of the plain north of the great highland (Fig. 317). Thus Europe has a large area with a favorable climate along its western coast as the United States has along its eastern coast. On the opposite sides of the North Atlantic are found the leading industrial and commercial nations.

The Great Highland and the neighboring lowlands. The Great Highland extending from Spain to the Black Sea, with its branches which form the backbone of each peninsula of southern Europe, is a barrier to trade and travel between northern and southern Europe. It separates northern Europe with its long, cold winters in the interior from southern Europe with its climate like that of southern California. This highland with its many regions famed for their scenery and climate is a favorite pleasure and health resort (Fig. 316). These regions are near the most densely populated parts of the continent. They are therefore visited more often than are the higher and perhaps equally beautiful sections of our western mountain ranges.

The Lesser Highland and the neighboring lowlands. The Lesser Highland of Europe includes the Scandinavian Peninsula, portions of England, Scotland, and Wales, and near-by islands (Fig. 313). It consists of a series of low, heavily forested mountains, thinly populated and famous for their scenery (Fig. 318). These low mountains reach to the sea, and in places their lower valleys are filled with ocean water, forming beautiful fiords, many of which are fine harbors. Since these harbors are all near the great fishing grounds of the North Atlantic, many busy fishing towns are found along the deeply indented shores of this section of Europe.

FIG. 317. **Distribution of rainfall in Europe.** From what direction do the winds come which bring rain to Europe? Why is there more rainfall in western than in eastern Europe? Locate the cities of Kiev and Brest (Fig. 315). Compare their annual and seasonal rainfall (Figs. 314, 324, and 495).

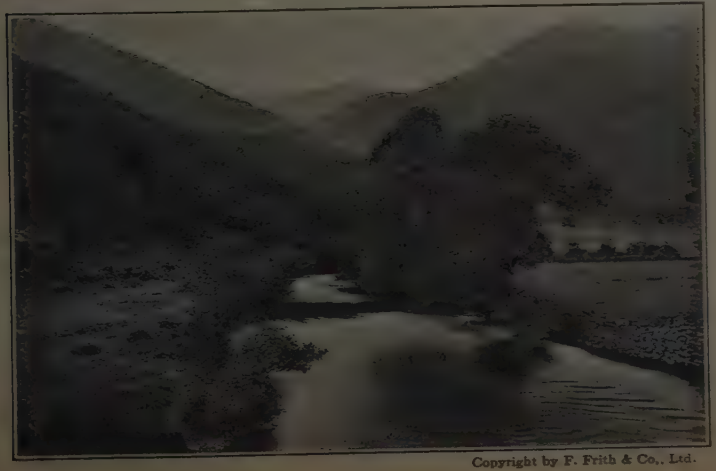


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FIG. 318. **A picturesque mountain valley in Wales.** This is Gwynant Valley near Mount Snowdon, the highest elevation in northwestern Wales (Fig. 325). This entire region, known for the beauty of its scenery, is much visited by tourists. These mountains and deep valleys have been made the scene of many stories of romance and adventure.

How far is this region from Liverpool? from Manchester? Can you tell why it is desirable to have such a place of recreation near these large industrial and commercial cities? Name regions in our country similarly situated near great industrial centers.

OROC

FIG. 310. **Cattle grazing on the plains of Denmark.** Notice the flat surface of the land. This is a characteristic feature of the Great Lowland Plain throughout the Low Countries.

In Denmark the moist, cool climate especially favors the raising of hay and fodder, and much of the lowland is given over to such crops and pastures. Cattle raising and dairying are the chief industries, and poultry and great numbers of hogs are raised. Can you explain why a dairying region favors the raising of hogs?

Denmark exports quantities of butter, eggs, and bacon to England. What products do you think are received in return?

The highland areas of Scotland, England, and Wales with their opportunities for hunting and mountain climbing attract many summer visitors. Because they are near the densely populated industrial centers, large numbers of people visit them each year.

The Great Lowland Plain of Europe. The Great Lowland Plain extends from France eastward across the entire continent of Europe far into Asia, becoming broader toward the east. This plain includes the moist Low Countries, the Netherlands and Denmark (Fig. 319), where much of the land is but a few feet above sea level, and the dry, cooler northern portions of Russia. The crops that are produced vary with soil and climate. Much of this lowland has good soil, but certain sections, like parts of the Coastal Plain of America, are sandy and do not yield good crops. Yet the Great Lowland Plain is the chief agricultural area of Europe and furnishes the supplies for the industrial section with its many thriving cities.

The Central Upland and the neighboring lowlands. Southward the Great Lowland Plain becomes higher and merges into the Central Upland which forms the northern border of the Great Highland. Like that of the Appalachians, this upland is a mining section furnishing raw materials (Fig. 320) and power for manufacturing. The river valleys which extend across the plain to the North Sea or the English Channel are therefore industrial centers with large manufacturing cities and great ocean ports.

127. DISTRIBUTION OF THE CLIMATIC AREAS OF EUROPE

THE LESSON FORECAST

1. The three chief climatic regions.
2. The climate of the interior north of the Great Highland.
3. Regions where the winter climate is cool, moist, and even.
4. Regions where the winter climate is warm, moist, and even.
5. How southern Europe is protected from the cold winters of the north.
6. Why the Mediterranean coast is a favorite winter resort.
7. Methods of farming in southern Europe.
8. The leading crops of the warm, dry Mediterranean region.

The region with great seasonal extremes of temperature. According to climate, Europe is naturally divided into three areas. North of the Great Highland the plain is moist in the west, but gradually grows drier toward the east. In southern Russia, because of the

FIG. 320. **The mineral deposits of Europe.** Do you find any minerals here that are not shown on the mineral map of North America? (Fig. 84.) In what countries of Europe are deposits of coal and iron ore found close together? Does this suggest anything as to the leading occupation in those countries? Which countries of Europe have no petroleum?

Where are potash and phosphates found? Why are these two salts important? (Sec. 66.) In what country do you find deposits of platinum? This country controls the platinum market of the world. Can you suggest why? In what country of Europe is the greatest variety of minerals found?

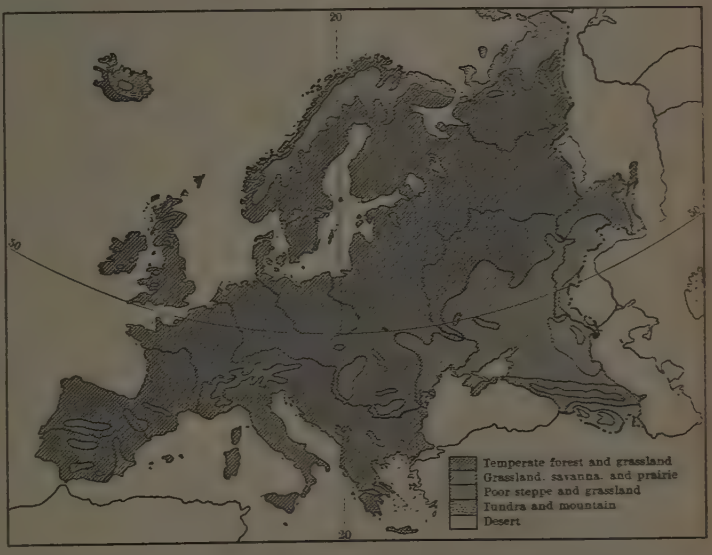


FIG. 321. **Vegetation of Europe.** What is the relation between the areas of little rainfall shown in the rainfall map (Fig. 317) and the desert and tundra areas shown on this map?

Travel eastward from France on the 50th parallel. How can you account for the changes in vegetation that you find? What different types of vegetation would you find if you were traveling from the northern to the southern part of Europe along the 20th meridian?

Note the dotted areas in Great Britain and the Scandinavian peninsula. How may they be explained? Notice also the unusual distribution of vegetation between the Black Sea and the Caspian Sea. How may this be explained?

distance from the ocean, the region is a dry steppe like the Great Plains region in the United States (Fig. 321). The northern coast, like Canada, has a short, hot summer and a long, cold winter. Rivers are frozen and trade by water almost ceases in the winter months. But the frozen rivers, lakes, and marshes provide winter highways for land travel.

The cool, even temperature of the west coast. The western coast is ice free throughout the winter, as is the coast of southern Alaska on the western side of America. Northern Norway, although far north of the Arctic circle, has a winter climate similar to that of the region round about New York City which is the same distance from the Equator as is Napoli (Naples), Italy.

Publishers Photo Service

FIG. 322. **A scenic highway on the island of Sicily.** This highway winds for three miles from the coast up rugged hillsides before it reaches the ancient town of Taormina.

Tourists are greatly attracted to Taormina with its picturesque location and many fine views of the blue Mediterranean Sea and the Sicilian mountains. On clear days there is a splendid view of Mount Etna, the highest peak in Italy. Of special interest are the Greek and Roman ruins near by. Do you know why Sicilians fear Mount Etna? Find out why Sicily is said to hold a key position in the Mediterranean.

The warm south coastal region. In the bordering countries and islands (Fig. 322) of the Mediterranean the climate is like that of the southwestern coast of the United States, with hot, dry summers and warm, moist winters. The Great Highland protects this area from the storms which sweep across northern Europe in the winter months.

From Marseille eastward to Napoli the climate is quite similar to that of southern California. The even winter temperatures (Fig. 315), the clear skies, and the warm, blue waters of the Mediterranean have made this region famous as a winter resort the world over. Because of the dryness of the summer, agriculture is carried on chiefly by means of irrigation. This is especially the land of the olive. Here the vine flourishes and here also we find maize or Indian corn grown in large quantities for food.

128. WHY EUROPE IS THE HOME OF MANY NATIONS

THE LESSON FORECAST

1. The number of countries in Europe.
2. Result of the desire for natural protection.
3. Protection offered by different land formations.
4. The influence of mutual distrust.
5. How large nations influence smaller ones.
6. What "buffer" countries are. The reasons for them.
7. The effect of barriers upon trade and travel.
8. Why trade and travel are more difficult in Europe than in America.

The influence of physical barriers and of jealousy. Europe, with an area only a little greater than that of the United States, is occupied by thirty-two different countries, some of them very old (Fig. 315). Nations when young were constantly at war with one another, and each nation desired as much protection as possible. People living on islands or peninsulas or in isolated mountain valleys can protect themselves from enemies much more easily than can people living on plains. Europe, therefore, with many peninsulas, many island groups, and a large number of mountainous regions, became the home of many nations. But nations even today do not always live at peace with one another. The stronger nations desire to become still stronger, while the weaker nations are always in fear of being conquered by stronger ones. Fear and jealousy, therefore, as well as physical barriers, have helped to keep Europe a land of many nations.

Influence of the stronger nations. In some instances stronger nations which fear each other have encouraged the development of smaller nations lying between them. Good examples of such nations are Belgium and Luxembourg, which lie between France and Germany. These small countries are called buffer countries.

After the World War old boundaries were changed and a number of new nations were established in the territory that had been known as the empires of Austria-Hungary and Russia. Europe, therefore, is even more divided today than it was before the war.

Difficulties of trade and travel in Europe. Each nation has its own laws as to trade and as to the admission of visitors or people wishing to settle there. Trade and travel between different parts of Europe are therefore not carried on so easily as they are in our own country, where the states are all part of one great nation. It is easy to imagine how difficult travel would be if everyone touring in an automobile in the United States had to be questioned and have his baggage examined every time he crossed a state boundary line.

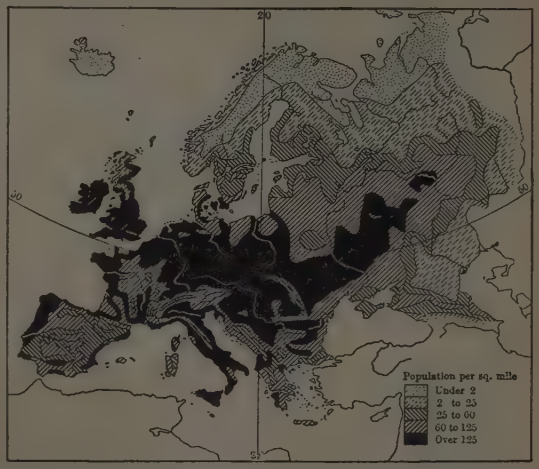


FIG. 323. **Distribution of population in Europe.** What reasons can you give for the thinly populated regions? Which are more densely populated, the plains or highland areas? Can you locate the industrial and agricultural regions? (Figs. 313 and 321.) Which are more densely populated? In what latitude are the largest number of people found?

SOME RELATED PROBLEMS

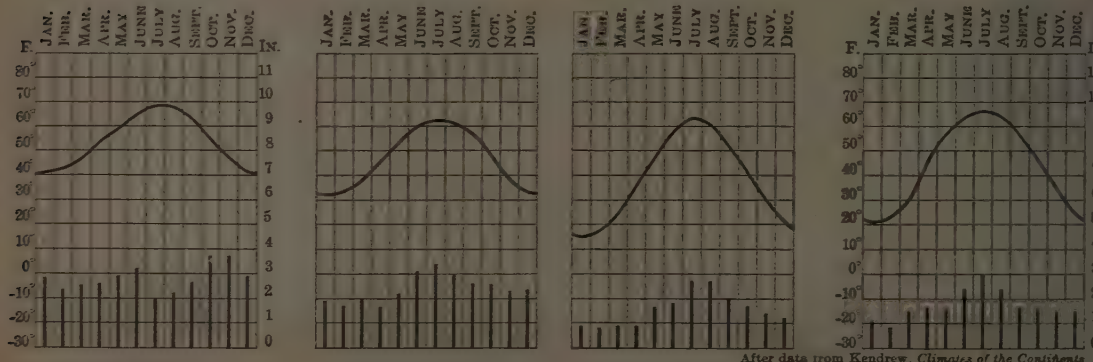
1. Why is the climate of the Atlantic coast of Europe similar to that of the Pacific coast of North America?
2. Why is the difference between January and July temperatures greater in Beógrad (Belgrade) than it is in København? (Fig. 366.)
3. Compare the time now required to cross the Atlantic with that required in colonial days. Explain the reason for the difference in time.
4. Why is western Europe as a region more important today than southern Europe, whereas two thousand years ago the opposite was true?
5. Why do most of the people of North America speak the English language?
6. Make a list of the nations of Europe from which the ancestors of your classmates came.
7. Why is Europe visited by large numbers of American tourists?
8. Why is the population of Europe so unevenly distributed? (Fig. 323.)
9. Notice the contrast in the seasonal distribution of rainfall at Beógrad, Yugoslavia, and Seville, Spain. In what places in the United States may similar contrasts be found? (Figs. 209, 225, and 366.)
10. Why were the crops of western Europe not well adapted to the northeastern portion of the United States?
11. What new crops did the early settlers of America learn to grow?
12. Locate and note where parallel 55° north latitude crosses North America. Compare the crops in this area with those in the area in Europe crossed by the same parallel (Figs. 78 and 313). What are your conclusions as to which area is the best one in which to make a living? Consult temperature, rainfall, and physical maps.
13. What would lead you to think that the near-by island areas of northwest Europe were once a part of the continent?

COUNTRIES OF THE LESSER HIGHLAND AND NEIGHBORING LOWLANDS

129. WHAT THE MAPS, TABLES, AND GRAPHS SHOW

Problems:

1. Why is the North Sea commercially an important body of water? (*a*) How does it compare in size with Texas? (See Fig. 144, where map is on same scale as Fig. 325.) Why can the areas on these two maps easily be compared? (*b*) What countries must do all or part of their foreign trading through this sea? (*c*) How important is the North Sea as a fishing area? (Fig. 79.) (*d*) What water gateways lead into and out of the North Sea? (Fig. 325.) (*e*) What great cities are situated on the margin of or near to the North Sea? (*f*) What do the maps of industries and population suggest as to the probable volume of trade carried on over this sea?
2. Where on the east coast of North America do we find summer and winter temperatures similar to those of the coastal regions of northwestern Europe? (*a*) Compare the latitude, January temperature, and rainfall of Brest with those of Wilmington, N. C. (Figs. 145 and 314.) (*b*) Compare also the January temperatures of Bergen and New York City (Figs. 122 and 314). (*c*) Compare, also for January, the temperatures of Nidaros and Boston; of Nidaros and Hebron, Labrador (Figs. 105, 255, and 314).
3. In what ways is Great Britain favorably situated for foreign trade? (*a*) Why is the position of the island an advantage? (*b*) Why is it easy for Great Britain to trade both with the people of the Continent and with the Americas and Asia? (*c*) What drowned valleys of the island have afforded good harbors? (*d*) How do the surface features favor the building of railroads between the larger ports and the inland cities?
4. Why do Norway, Sweden, and Finland have fewer people per square mile than do the lowland countries of western Europe? (*a*) How many people per square mile in each of these countries? (Find data in Appendix.) (*b*) Compare these figures with the density per square mile in Germany, France, Denmark, and Belgium. (*c*) Why do Norway, Sweden, and Finland have such a small amount of land on which people can make a living? (*d*) In what ways is the climate of these three countries a handicap to agriculture and commerce? (*e*) Why are there so few industries in these countries that require a large number of workers? (See sec. 134.)



After data from Kendrew, *Climates of the Continents*

Bordeaux, France
Alt. 216 ft. Temp. 54.1°
Rainfall 33.4 in.

Hamburg, Germany
Alt. 82 ft. Temp. 46.9°
Rainfall 28.9 in.

Leningrad, U.S.S.R.
Alt. 30 ft. Temp. 38.7°
Rainfall 18.8 in.

Kiev, U.S.S.R.
Alt. 590 ft. Temp. 44.2°
Rainfall 21.1 in.

FIG. 324. **Average annual temperature and rainfall for four cities of central Europe**

FIG. 325. A Map of Northwest Europe

Surrey Flying Service, from OROC

FIG. 326. **An airplane view of a section of London.** The great building with the dome seen in the center of the picture is the British Museum famous for its books and manuscripts and its many other collections gathered from all parts of the world. What are the areas with trees? Why are such areas desirable in a great city? Compare this view with those of New York City and San Francisco (Figs. 141 and 237). What difference do you notice in the buildings?

THE BRITISH ISLES

130. BRITISH POSSESSIONS

THE LESSON FORECAST

1. Meaning of the terms British Isles, Great Britain, England, United Kingdom, and British Empire.
2. How the United Kingdom and its possessions help each other.
3. Names of the more important possessions of the British Empire.
4. Why British possessions are loyal to the home country.
5. Reasons for the difficulties with India.
6. Coöperation in the World War.

The meaning of certain territorial names. The British Isles is the name given to the islands of Great Britain and Ireland together with the many near-by small islands. The island of Great Britain includes England, Scotland, and Wales. The island of Ireland contains the Irish Free State and Northern Ireland. The two islands form what is known as the United Kingdom. The British Empire is the name used to include all British possessions in all parts of the world. The largest of these possessions are Canada, India, Australia, and South Africa. The city of London (Fig. 326), which is the capital of the United Kingdom, is also the capital of

OROC

FIG. 327. **A farm landscape in southeastern England.** This is a scene in the county of Surrey southwest of London. The region here is drained by the river Mole and is crossed from east to west by low hills known as the North Downs.

The country is unusually picturesque with its quaint little villages, winding roadways, deep groves, and rolling pastures and fields. What in this picture suggests that this is an agricultural rather than a manufacturing region?

the British Empire. We frequently speak of the United Kingdom as England when England is only one of the countries of the island of Great Britain, which includes England, Scotland, and Wales.

The loyalty of the British dominions. The United Kingdom is one of the great industrial and commercial nations of the world. Nearly all its possessions contribute to the wealth and strength of the home country. For these possessions send it large quantities of food and raw materials and furnish markets for its many kinds of manufactured products.

The larger possessions, except India, are practically self-governing, for their progress is in no way hampered by direction from the central government at London. The British Empire is so united in interests and in trade relations that the distant possessions are all loyal to the home government. The only large territory in which British rule is not considered desirable by all the people is that of India. With its dense population of many millions that do not find it easy to work together or do not understand being ruled from the home country, India presents a particularly serious problem to the British Empire.

During the great World War all the distant possessions of the British Empire rallied loyally to the support of the home country, and great numbers of troops and vast quantities of supplies were sent to assist in the cause.

131. WHY THE UNITED KINGDOM IS A MANUFACTURING NATION

THE LESSON FORECAST

1. How occupations have changed in the United Kingdom in a hundred years.
2. Why the way in which the land is used has changed.
3. The dependence of the United Kingdom upon the rest of the world.
4. How the invention of modern machinery has affected occupations.
5. The influence of the colonies upon home industries.
6. Reasons for the great shipbuilding interest.
7. How specialization has helped manufacturing.
8. How increase in population is related to industry.
9. Reasons why agriculture is continued in certain areas.
10. What crops thrive best in the United Kingdom.
11. The importance of fishing and mining.

A century of change. Only a little over a hundred years ago more than a third of the people of the United Kingdom made a living by farming. Today more than five times as many people are engaged in manufacturing and mining as in agriculture.

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FIG. 328. A Devonshire farmstead. The county of Devon lies in southwestern England. The surface of this region is uneven and hilly and the scenery striking. Devonshire is one of the chief cattle- and sheep-raising counties in England. It is famous for its dairy products, especially clotted cream. (Learn something about clotted cream.)

Note the thatched roofs of the cottages. Why do you think they use thatch instead of shingles or slate? Do you know why thatched roofs are usually steep? Notice closely the walls of these buildings. Judging from them, what building material do you think is found in Devonshire?

In the same length of time the population of the kingdom has increased fourfold. This great change in the position of the farming industry as compared to that of other occupations is similar to the changes that have taken place throughout the eastern United States.

The soils and climate of the country have not changed and crops grow as well today as they did in the past (Figs. 327 and 328). But so greatly has the demand for manufactured goods increased that, where conditions are favorable for manufacturing, the land once devoted to farming is now needed for factories and towns.

The dependence of the United Kingdom upon the rest of the world. The United Kingdom, once raised the food and produced the materials for clothing and for most of the necessities its people required. But today the home country imports great quantities of food and raw materials and exports increasing quantities of finished products. So dependent is it upon the rest of the world for the raw materials needed for its factories and food for its people, that if exports were shut off for only a few months the people would suffer.

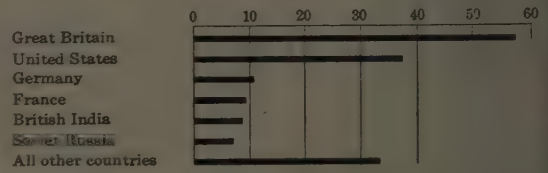

FIG. 329. Rank in millions of active spindles of the countries which lead in the manufacture of textiles

England, even in the days before the American Revolution, had begun to buy raw materials and to sell manufactured products. With the invention of machinery and the use of steam for power, manufacturing began to develop rapidly, especially near the supplies of coal and iron found in central England (Fig. 329).

Great Britain as a manufacturing region. As British colonies grew in numbers and population in many parts of the world, the market for manufactured goods increased rapidly, aiding the development of industry in the home country.

With the expansion of industries came other new inventions and even greater demand for machinery. Iron mining and steel making became more important. Great Britain, therefore, with its supplies of coal and iron, developed the steel industry.

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FIG. 330. **A flock of sheep in Sussex County, England.** Sussex County borders part of the south coast of England, and its largest city, Brighton, is a port (Fig. 325). Sussex is crossed by a range of low hills known as the South Downs, which furnish excellent pasturage for sheep. Note the location of the little village seen in the center of the picture. How is it protected from the wind? Can you see how many small valleys come together here? Do you think the village is well located? Why?

Ships were needed to carry the increased exports of the country, and so shipbuilding expanded. The river Clyde, Scotland, is now one of the great shipbuilding centers of the world.

Today central England from Manchester and Leeds to Birmingham is one of the greatest industrial areas in the world. Textiles (Fig. 329) and iron goods are the chief manufactures. Raw materials can easily be secured through the near-by ports, and the fuel and iron are close at hand. Exports can be readily shipped to foreign markets.

The people of Great Britain have learned to specialize in the products they can turn out most profitably. Chief among these products are cotton and woolen goods. The cotton and wool for their factories are imported from all parts of the world, the wool coming largely from Australia and the cotton from the United States. The products of their factories are exported to all parts of the world, especially to India, Australia, and the United States.

The relation of manufacturing to other industries. As manufacturing has developed and the population has increased, the amount of land that can be used for agriculture has decreased. Great quantities of food, especially wheat, meat, butter, and sugar, must therefore be imported. As a result of this exchange of products, the United Kingdom has become one of the first commercial nations of the world.

The importance of agriculture. With the exception of the manufacturing areas, agriculture is followed wherever conditions are favorable. In the highlands and on moist western slopes cattle raising is important. Where it is moist and cool, oats are produced, while in the drier regions wheat and sheep are raised (Figs. 328 and 330). These were the chief farm products when Great Britain raised most of its food, and they are therefore still raised where conditions permit. In certain sections many other products, such as fruit, potatoes, and turnips, are grown. Milk and fresh vegetables are also produced wherever they can be quickly marketed.

Other industries besides farming which employ many people are mining and fishing (Fig. 79). The United Kingdom is rich in coal and iron. Iron is mined mostly for home use, but coal is also mined for export, Welsh coal being famous for its fine quality. Another valuable mineral is tin, mined in both England and Wales. On the northeast coast of England are a number of important fishing centers (Fig. 332). Because they are near the fishing grounds found over the shallows of the North Sea, these places have long led in the fishing industry.

132. THE CITIES AND PROBLEMS OF THE UNITED KINGDOM

THE LESSON FORECAST

1. Why London has become a great city.
2. Reasons for the importance of Liverpool.
3. Why Birmingham has great iron manufactures.
4. Other great manufacturing cities of the United Kingdom.
5. The problems of the British people.

The leading commercial cities. London (Figs. 331 and 333), the second largest city in the world and the chief city of the British Empire, is an old city. In the Middle Ages London was a small walled city. With the industrial and commercial development of England it has grown rapidly. It is situated on the Thames at the first point where the river can be bridged. The Thames, opening toward the continent of Europe, was long

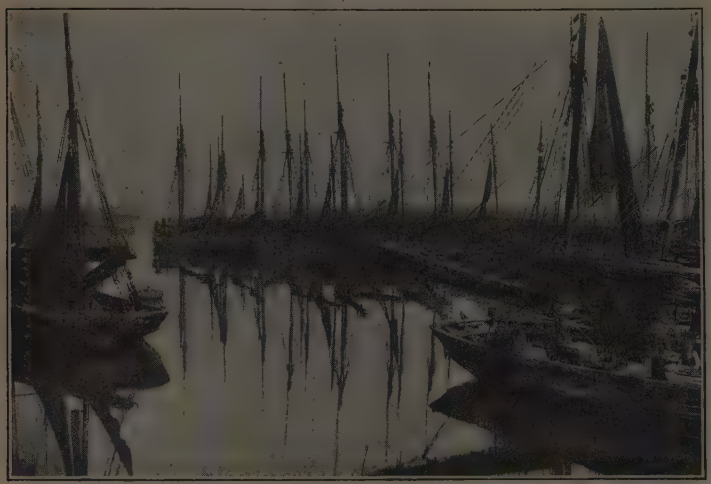

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FIG. 332. **Fishing boats in the harbor of Lowestoft, England.** The old town of Lowestoft lies on the east coast of England about four miles south of Great Yarmouth (Fig. 325). Men from Lowestoft have long followed the sea. As early as 1086 there was a fishing hamlet here. Now there are over six hundred fishing smacks and trawlers belonging to the port. Look up the word trawler in the dictionary. Can you explain how a trawler differs from other boats?

In what waters is fishing carried on here? To what large cities do railroads from Great Yarmouth run?

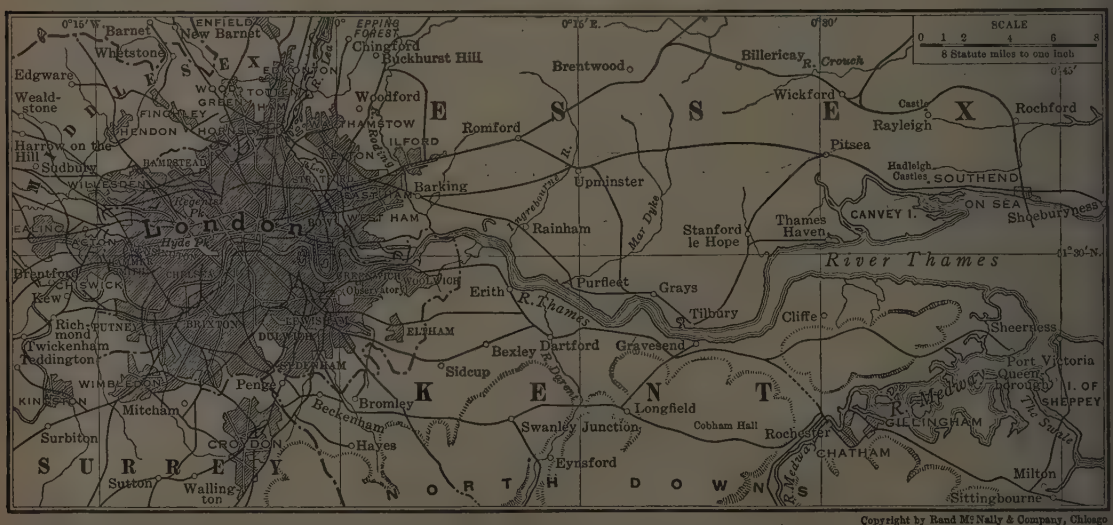

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FIG. 331. **The city of London and surrounding region.** Notice the location of the city fifty miles up the Thames. Explain the advantages of this inland location with opportunities for direct water communication with foreign countries. Notice the number of railroads running into London. Do these roads show that London can be easily reached? Locate the Observatory at Greenwich (Fig. 315). Note how the meridian passing through it is numbered.

the chief center of commerce, for the trade of England with the near-by Continent naturally is great. Then, too, London has the advantage of being easily reached from the manufacturing districts of the interior and can therefore handle both imports to and exports from the great industrial centers of England. London, the seat of government for the whole British Empire, had an early start in trade and is still the leading commercial center of the nation. This is true although the larger modern steamships cannot reach the city because the channel of the Thames is too shallow at that point.

Liverpool (Figs. 334 and 335), another great commercial center, is located on the

FIG. 333. **Charing Cross and the Strand, London.** Charing Cross is the point where many of the two hundred omnibus lines of London meet. On the right may be seen an old railway station, and in the foreground an entrance to London's underground railway system. Which of our cities has a similar system? Can you explain why such subways are necessary in great cities?

Only a small section of the Strand is seen in the picture. This broad street is one of the busiest and most important thoroughfares of London. It is lined with large hotels, fine shops, and theaters. This neighborhood, which is now the heart of London, was the site of a small village in the late Middle Ages.

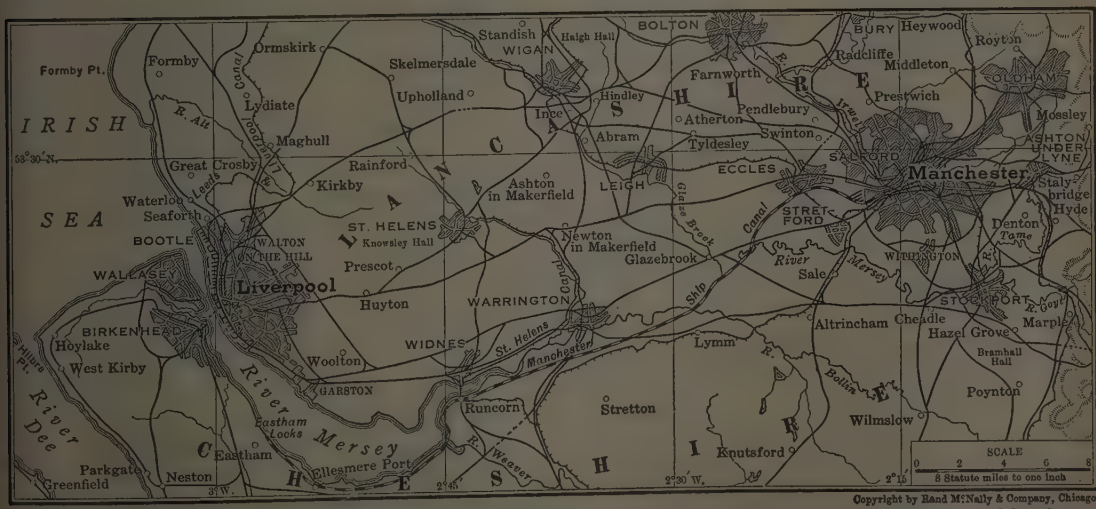

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FIG. 334. **Liverpool, Manchester, and surrounding regions.** Using the scale of miles, find out the length of the Manchester Ship Canal. Manchester is called an inland port. Can you tell why? Find out where this great cotton-manufacturing center obtains its power and its raw cotton. Notice how the Mersey expands at the lower end of its course. Is this an advantage? Give the reasons for your answer. How do you think the great industrial region back of Liverpool has helped in its growth?

By Aerofilms, from E. Galloway

FIG. 335. **An air view of a section of Liverpool's harbor.** The docks and wharves of Liverpool lie along both banks of the Mersey and are a most interesting sight. They are all under the same management.

On the Liverpool side of the Mersey the shipping front is six and a half miles long. This view shows the docks and wharves located almost directly across from the point of land on the left side of the harbor entrance (Fig. 333). Can you explain why Liverpool was unimportant before the discovery of the Americas? What two cities in the United States have a location similar to that of Liverpool and Birkenhead?

western coast facing America. It is connected by a ship canal with Manchester, an important cotton-manufacturing city which depends on our country for most of the raw cotton for its manufactures. Liverpool leads all other cities in its trade with America.

Glasgow, the largest shipbuilding center in the world, lies at the western entrance to the densely populated Scottish lowland and is a flourishing commercial city. Among other thriving cities are Bristol, one of the oldest ports; Cardiff, a great coal-exporting city; and Plymouth, where vessels sailing between America and the continental ports of the North Sea call regularly.

Leading industrial cities. Birmingham, with a population about equal to Cleveland, is the second city in size in Great Britain. Because it is near deposits of coal and iron, it has become a great iron-manufacturing city.

Manchester and the smaller towns about it form the greatest cotton-manufacturing district of the world. Manchester owes its leading position in this industry in part to its excellent shipping facilities, furnished by the canal and the port of Liverpool.

Leeds, on the eastern slope of the highlands, ranks first in the manufacture of woolen goods. This is largely because it specialized in these goods long before the days of steam and machine spinning and weaving.

Edinburgh, lying on the eastern side of the Scottish lowland, has long specialized in the production of books and paper. Coal is near at hand and paper pulp can be easily imported.

Places of special interest. The United Kingdom is rich in places famous for their historical associations or scenery. Scotland (Fig. 336), the highlands of northern England, and the mountains of Wales are the chief scenic regions, although the beaches of southeastern England attract many visitors from the large cities near by. The rural districts of southern England are also famed for their scenery, especially enjoyed by those who tour the country in automobiles (Fig. 337).

The old cities, the many cathedrals and other famous buildings, and the places of historic interest such as the birthplace of Shakespeare are all visited by those interested in history or English literature.

Problems of the British people. The United Kingdom, being the center of the British Empire, has many problems to solve besides those connected with its own home

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FIG. 336. **In the highlands of Scotland.** This is a view on the shores of Loch Long about fifteen miles north of Greenock port (Fig. 325). The scenery of this region is noted for its wild and romantic beauty, and many of the clear lakes and deep glens have been made famous by Sir Walter Scott. Have you read *The Lady of the Lake?* Name the lake. What noted mountain peak is in this vicinity?

Note the long horns of the highland cattle. Do you think the cattle raised here must be a hardy breed? Why?

interests. The home country is dependent upon others for food and raw materials for manufacture. Hence it is necessary that nothing interfere with imports, as happened during the World War when the British Isles were surrounded by enemy vessels that attempted to destroy incoming ships. The colonies and distant possessions must be kept loyal to the home country, and it must be made more advantageous for them to trade with the home country than with other countries. As so large a proportion of the people depend upon manufacturing for making a living, it is necessary that the home country lose none of its present markets and that new markets be found. Unless the people are busy and can make a good living, there will be unrest and trouble.

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FIG. 337. **A Dorsetshire village street.** Dorsetshire borders the southwest coast of England. One of its chief ports is Weymouth (Fig. 325). Its mild climate and beautiful scenery attract many visitors every year for their vacations. Can you explain why the climate should be so mild?

133. IRELAND: THE SO-CALLED EMERALD ISLE

THE LESSON FORECAST

1. Why agricultural conditions are better now than they once were.
2. Reasons for the delayed development of Ireland's resources.
3. Why Dublin is the chief city.
4. The chief problems of the Irish Free State.

How Ireland is divided. The island includes two political divisions, Northern Ireland and the Irish Free State. The Irish Free State is the larger section, but manufacturing is most important in Northern Ireland.

How the people make a living. Ireland is largely an agricultural country. The good soil and moist climate favor the growth of oats, barley, flax, and potatoes which are the chief crops of the country. The raising of cattle, sheep, and horses is also carried on extensively. Agriculture prospers except in very wet years. Then the crops often fail and there is much suffering. In the past many Irish have emigrated to other countries, especially to America, partly because of the difficulty of making a living in Ireland.

FIG. 338. **Pigs on their way to market, Cork, Irish Free State.** These fat hogs are being driven down one of the quaint old side streets of Cork. Find Cork on the map (Fig. 325). Ireland is famous for its bacon, although approximately there is only one hog for every three persons, while in the United States there is one hog for every two. Find out on what hogs in Ireland are fed.

Note the two-wheeled cart. This kind of cart has been in use for years in Ireland. Do you know what it is called?

Until recent years the farmers were obliged to rent their land from the large landowners. Today the people can buy the land and become landowners. Working for themselves encourages them to become better farmers than they were when tenants.

The people and the cities. The Irish Free State has a government similar to that of Canada. This government was established only a few years ago, after a long period of struggle and uncertainty which kept the country from developing its resources. Since then the Irish Free State has been practically free from control by the British government.

Dublin, the capital and chief city of the Irish Free State, has become a trading center because of its central position across from the island of Great Britain. Cork, which depends upon Cobh for a port, is another flourishing trade center (Fig. 338).

Belfast, on the eastern coast of Ireland, is a leading seaport and a center for linen manufacturing and shipbuilding. The linen is made from flax. Although flax is one of the chief crops of Ireland, large quantities are imported. The eastern portion of Northern Ireland is peculiarly adapted to linen spinning because of the climate, the water supply, and the presence of cheap, good laborers.

Problems of the Irish people. The Irish Free State is young and hence its problems are many. It is the nearest possession of the United Kingdom that can furnish food for the people of the home country. A far greater advantage could be taken of this opportunity for marketing its products than has yet been done.

If power can be obtained cheaply, then manufacturing will be increased and employment will be furnished to those who are not skilled in farming.

Above all, however, the people of both northern and southern Ireland have yet to prove that they can maintain a government capable of developing home industries and trade. One that will be able to maintain friendly relations with other countries and especially with the United Kingdom.

SOME RELATED PROBLEMS

1. Why can the British Isles now support so many more people than they once could?
2. In what ways is London better located for trade with the Continent than is Liverpool or Glasgow?
3. In what way is the welfare of the British dependent upon our Southland?
4. What are the advantages and disadvantages of Great Britain's position?
5. Compare Glasgow and Philadelphia as shipbuilding centers.
6. What conditions help to make the eastern coast of Great Britain a fishing center?

Photo by Underwood & Underwood, New York

FIG. 339. **Haying time in southwestern Norway.** This beautiful fertile valley lies in the region just east of the city of Bergen (Fig. 315). The valley runs down from the southwestern slopes of the mountains to a small fiord which extends far inland. Notice, dim in the distance, the mountain ranges of central Norway.

On the lower slopes of the mountains and on the floor of the valley the soil is deep and fertile enough for gardens and hayfields. Here the season is very short, but the long summer days make it possible to raise certain crops. How far is Bergen from the Arctic Circle? What is the rainfall in this region? (Figs. 314 and 317.)

Notice in the picture the racks of drying hay. In Norway hay is always dried in this way. A horse and cart may be used to carry the dried hay to the barn, or the women may carry it, for in Norway women do much of the out-of-door work.

THE SCANDINAVIAN PENINSULA AND THE FINNISH LOWLAND

134. NORWAY: A NATION OF SEAFARING PEOPLE

THE LESSON FORECAST

1. Why Norway has a very rugged coast.
2. What is meant by a fiord; by the midnight sun.
3. How the climate of Norway compares with that of New York.
4. Why the Norwegians became a shipbuilding and seafaring people.
5. Why Norway should be successful in manufacturing.
6. Reasons for the location and importance of the chief cities.
7. Problems of the Norwegians.

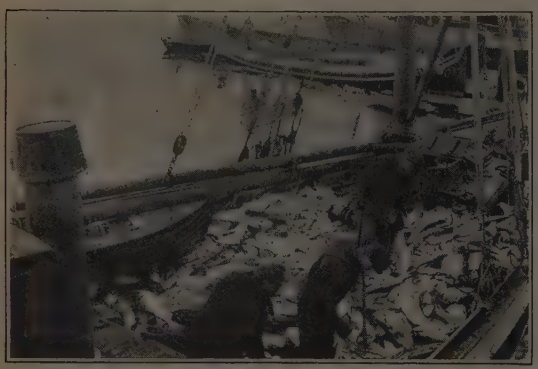
The nature of the country. Norway is a narrow country lying on the rugged western slopes of the Kjölen Mountains which form the backbone of the Scandinavian Peninsula. The coast line is very irregular with many bays or fiords that extend far back into the country and form excellent harbors. Some of these fiords are surrounded by high mountain walls which afford much beautiful scenery. A large number of visitors go to Norway each year, especially to the northern portion or the land of the midnight sun, where for about two and a half months in summer the sun is constantly visible.

How physical conditions have influenced the people. The country is densely forested with pine and fir trees that are used in shipbuilding and in making wood pulp (Fig. 341). The climate is moist and never severely cold, even northern Norway having a winter temperature like that of the region around New York City. Because of the rugged surface there is little land for farming (Fig. 339).

Courtesy Norwegian Government Railways Travel Bureau

FIG. 341. **Hauling logs to the mills in Norway.** The principal forested regions of Norway are found in the southern and southeastern parts and in the district around Trondhjem (Fig. 315). Learn what kinds of trees flourish in the high latitude of Trondhjem. The trees here are used largely for wood pulp rather than for lumber. Can you explain why?

Compare this scene with Figs. 31, 32, 33, and 233. What differences do you find? Why is it easy to haul logs in winter? Where do you think the power is obtained for running the mills here? Where are markets found for the wood pulp?



Courtesy Norwegian Government Railways Travel Bureau

FIG. 340. **A load of cod, northern Norway.** Fishing for cod on the coastal banks begins in March or April with the Lofoten Islands as the base (Fig. 315). During the season fishermen come here from all parts of Norway. Fishing is the only industry of any importance carried on here. Why?

Barley, oats, and potatoes are the chief crops. Farms average about five acres in size. Only 3.4 per cent of the land is under cultivation.

Norwegians from the earliest times have been sailors. This is due to the fine climate, the many good harbors, the materials near at hand for shipbuilding, the nearness to the fishing grounds of the North Atlantic, and the fact that agriculture can be carried on only on a small scale. In their small boats the hardy sailors braved the stormy Atlantic and first discovered Iceland, Greenland, and the shores of northeastern North America. Today the Norwegians are largely fishermen or else engaged in shipping (Figs. 76 and 340).

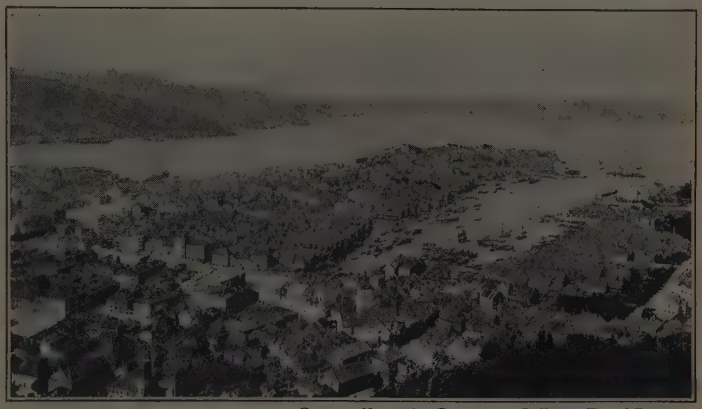
How the resources of the country are being used. Norway is just beginning to establish manufacturing. Long without power owing to the absence of coal, Norway is rapidly developing electric power from its streams and falls. Factories are run by electric power, and it has been proposed to furnish power to central Europe, so great is the amount that can be developed. Only about one-twelfth of the power is now in use.

The principal exports of Norway are fish, fish oils, and wood pulp. The imports are chiefly foods, textiles, and machinery which cannot be produced in sufficient quantity at home. Trade is carried on mainly with the United Kingdom, Germany, and the United States.

The people and the cities. Most of the people of Norway live in the cities and towns, few being found in the rural districts. The Norwegians, an industrious, vigorous people, are skilled as farmers and sailors. Many have emigrated to the United States and Canada, settling mostly about the upper Great Lakes and in the West, where they are mainly engaged in farming.

Courtesy Norwegian Government Railways Travel Bureau

FIG. 342. **The water front at Oslo, Norway.** The city of Oslo lies at the head of Christiania Fiord about eighty miles up from the open waters of the Skagerrak (Fig. 367). The harbor of Oslo is icebound for three or four months in the winter while the harbor of Bergen on the west coast is not. Can you explain why?



Courtesy Norwegian Government Railways Travel Bureau

FIG. 343. **The harbor at Bergen.** This fine old city extends around the spacious harbor and climbs the steep hills surrounding the harbor. The streets of the quaint city present unusually picturesque scenes, for the houses are all painted in gay, bright colors and roofed with red tiles.

Bergen is much visited by tourists, for it lies in the heart of a remarkably beautiful scenic region. Find the reason for so many deep harbors extending far back along the coast of Norway.

There are no large cities in Norway. The largest is Oslo (Christiania), the capital, about the size of Atlanta, Ga., and the chief port for both imports and exports (Fig. 342).

Bergen (Fig. 343), on the west coast, is a great fish market and carries on shipbuilding and barrel making. Nidaros, located on a deep fiord on the central western coast, is a center for the manufacturing of lumber and wood pulp, and for the canning of fish. Hammerfest, the most northern town, is a small fishing center much visited in summer by tourists who are interested in seeing the midnight sun.

Problems of the people. Norway exports more than twice the value of the goods it imports, and in addition to its own trade transports goods over the ocean for other countries. Its prosperity depends, therefore, on peace between other countries so that its shipping may continue without interference. Norway is also interested in the development of industries that will give employment to its people so that fewer of them will emigrate to other countries. The unexcelled opportunities for developing electric power make possible an increase in manufacturing, even though it may be necessary to import many raw materials.

135. SWEDEN: A LAND OF EVERGREEN FORESTS

THE LESSON FORECAST

1. The importance of agriculture.
2. Importance of the forests and mines.
3. The fine quality of Swedish iron and steel.
4. How shipping is handicapped.
5. The important cities of Sweden.
6. Problems of the Swedish people.

The farms of Sweden. Sweden occupies the eastern and larger section of the Scandinavian Peninsula. Although a large part of the country is mountainous and forest covered, there is much good farming land, but

Courtesy Swedish State Railways

FIG. 344. A sawmill in Sweden. This sawmill stands on the shores of a large lake near Karlstad (Fig. 367). Logs are floated to the lake on streams. These streams also furnish water power, which is turned into electricity to run the mills. Study the picture and tell how the logs are taken into the mill.

The logs are chiefly spruce and pine. Lumber for building purposes is exported, and from the waste lumber wood pulp is manufactured. Tell what you know about wood pulp and the uses made of it.

Courtesy Swedish State Railways

FIG. 345. **An old copper mine at Falun, central Sweden.** The mining company here was given its first charter in 1347. How many years has the mine been in operation?

It no longer pays to work the mine for copper, since that has nearly all been taken out, but many valuable chemicals are now extracted from the earth in the mine.

The great pit in the foreground was formed many years ago when the roof of the mine fell in. Compare its depth with the height of the white building at the left. Several shafts have been dug beneath the pit, the deepest going down almost 1,100 feet. Do the walls of the pit look as if they were rock or soft earth?

the farms are small. The summer climate is warm and moist and crops therefore grow well. The chief farm products are oats, wheat, barley, rye, hay, and potatoes. Cattle are raised extensively and dairying is a thriving industry. About half the people are engaged in agriculture.

How the natural resources are used. The forests and the minerals are the most valuable resources (Figs. 344 and 345). Each year the forests yield great quantities of lumber and wood pulp for export to central Europe. The wood product with which we are most familiar is matches, although the making of matches gives work only to a small number. Sweden is rich in iron ore of a superior quality. This ore, smelted into fine steel, is used in making cutlery, watch springs, and other products requiring a high grade of steel.

Sweden, like Norway, has an abundance of water power that has been developed for furnishing light and power for its cities, railroads (Fig. 348), and homes. Even most of the farms use electric light and power.

Advantages for trade. Sweden is a shipping nation with many vessels engaged in

Courtesy Swedish State Railways

FIG. 346. **The water front at Stockholm.** The boat in the foreground is a coast steamer. The cranes lift goods directly from the hold of a vessel to freight cars on the tracks behind them.

Find Stockholm on the map (Fig. 367). In what latitude is it? How might its latitude lessen its value as a port? Here the harbor is kept open by ice breakers in winter. Find out what an ice breaker is.

In the background you see part of the city of Stockholm. Does it differ in appearance from a large American city? If so, how?

FIG. 347. **The harbor at Göteborg, Sweden.** Göteborg has a large commercial fleet and a world-wide trade. The harbor is practically never blocked by ice. Find out why the western coast of Sweden is much warmer than the eastern. Can you tell what ocean current causes this difference in temperature?

Give two ways in which passengers and freight can be carried from Göteborg to Stockholm by water (Fig. 72). Notice the boats in the picture. They are small passenger steamers coming from other Swedish ports. Tell why Sweden has many small harbors. Find out if it has as many as Norway.

commerce and in carrying goods for other nations. It is not, however, so well located for carrying on commerce as is Norway, for the harbors on the east coast are frozen during the long, cold winter. Ice breakers must then be used to make a passage for vessels.

The leading cities. Stockholm, the capital and chief city of Sweden, picturesquely located on a group of islands connected with one another and with the mainland by bridges, has a good harbor and is a port of entry (Fig. 346). It lies near the iron mines and near great forests, and is therefore well located for securing products for export. Although off the main ocean route, Stockholm is a prosperous city. It is connected with Göteborg by the Göta Canal (Fig. 72).

Göteborg (Fig. 347), more favorably located for commerce because it lies so near the North Sea, is the leading port and has a number of flourishing industries. Malmö, the third city in size, is situated across a narrow strait from Kobenhavn, with which it is connected by a car ferry. It is a railway terminal and imports coal and raw cotton.

Problems of the people. From Sweden, as from Norway, each year a large number of

people go to other countries, especially to America. How can the conditions for making a living be improved so that the Swedish people will find it desirable to remain in their own country? Sweden has vast resources in its forests, its mineral wealth, and its water power (Figs. 344 and 345) which can be developed if markets for the products can be found. How can manufacturing and commerce be increased? These problems could be solved if the densely populated countries of central Europe would buy larger quantities of raw materials and finished goods. For the welfare of one nation depends in large part on the welfare of other nations.

Courtesy Swedish State Railways

FIG. 348. **A train in the railway yards at Göteborg.** By what kind of power do you think this train is operated? How do you know? From what source is this power secured in Sweden? (Fig. 344.) Would you expect power in this country to be cheap?

136. FINLAND: A BUFFER COUNTRY

THE LESSON FORECAST

1. Why Finland is a buffer country.
2. Transportation problems.
3. How the people make a living.
4. The chief problems of the people.

Location and surface of Finland. Finland is a low, rugged country lying east of the Gulf of Bothnia between Sweden and the Soviet Republic of Russia. About three-fourths of its surface is occupied by lakes or forests. Many of the lakes have been connected by canals with one another and with the Gulf of Finland, and in summer transportation is easily carried on. The winters are long and cold, and then transportation is difficult.

How the people make a living. Agriculture and lumbering are the chief occupations of the people, although wood pulp and paper, textiles, and machinery are manufactured in many sections. Because of the cool climate and rather poor soils few crops can be grown. Oats, rye, barley, hay, and potatoes are the chief crops (Fig. 350). Dairying is a leading industry. Chief among the exports of Finland are timber (Fig. 349), wood pulp and paper, butter, cheese, leather, hides, and skins.

Finnish cities and problems. Cities are few and almost all of them are small. Helsinki (Helsingfors), the capital, is the chief seaport and trade center. Tampere (Tammerfors),

Gustafson

FIG. 349. **A farm scene in Finland.** Notice the buildings in the picture. Of what material are they made? Of what are the fences made? Do they tell you anything about the natural resources of Finland? Did you ever see such a fence? Why do we now have so few of these fences in America?

What kind of trees do you see in the picture? Where in America do we find forests of the same kind of trees? Do they tell you anything about the climate of Finland?

Gustafson

FIG. 350. **Haying time in Finland.** Study the picture. What are the men using to cut the hay? How many people are at work here? What part of the work are the women doing? Can you tell how many people it would take to do this same work with modern machinery? Do you think the crop is a good one? What use will be made of the hay?

What kind of vegetation do you see in the background of the picture? What use is made of this resource in Finland?

FIG. 351. **The river harbor at Turku, Finland.** Turku is the oldest city in Finland. It lies on the Aura-joki about three miles up from the Gulf of Bothnia (Fig. 367). Much of Turku's trade is carried on through Bornholm, its harbor on the coast, for the river is far too shallow for the passage of large vessels.

What products do you think are sent out from this port? What products would the Finns need to import? What are the disadvantages of Turku's northern position as far as trade and commerce are concerned?

the third city in size, is a center of manufactures. Turku (Åbo) (Fig. 351), founded in 1157, is the seat of flourishing industries, and near by are shipyards.

Like the Norwegians and Swedes, great numbers of Finns have emigrated to other countries where living conditions are better. How to develop the opportunities for making a better living at home and thereby restrict emigration is a problem to be solved. Finland lies between two larger countries, and has almost always been under the domination of one or the other. The country has many natural resources. Its people are hardy and vigorous. Can it remain independent and become a leading nation of northern Europe?

SOME RELATED PROBLEMS

1. What has made the Norwegian coast rugged and irregular? How does the Norwegian coast resemble that of British Columbia and southern Alaska?
2. Why are the Norwegians more dependent on the sea for a living than the Swedes?
3. Why are railways more easily built in Sweden than in Norway?
4. Why have many people come to America from the Scandinavian countries?
5. What conditions led the early Vikings to Iceland, Greenland, and North America?
6. Why are there no large inland cities in Norway and Sweden?
7. Compare Finland in respect to the many lakes with New England or Minnesota.

COUNTRIES OF THE GREAT LOWLAND PLAIN AND CENTRAL UPLAND

137. WHAT THE MAPS, TABLES, AND GRAPHS SHOW

Problems:

1. Why is the Great Lowland Plain of Europe well suited to be the home of millions of people? (*a*) How far is it from the Bay of Biscay to the Ural Mountains? from the Arctic Ocean to the Caucasus Mountains? (*b*) Compare winter and summer distribution of rainfall and temperature at Bordeaux with that at Leningrad (Fig. 324); Arkhangel'sk with Kiev (Figs. 324 and 366). (*c*) Where are areas too cold for farming? where too dry? (*d*) Is the surface favorable for farming? (*e*) Why is it easy to build railroads in most directions? (*f*) Why is water transportation easily carried on? (*g*) Why was it not difficult to connect the rivers by canals? (*h*) What ocean highway is easily accessible from most of the region?
2. Why do many millions of people live on the plains around the Baltic Sea while but few live in the vicinity of Hudson Bay? (*a*) Compare the two bodies of water as to latitude. (*b*) Compare the distribution of temperature and rainfall at Hebron, Labrador, with that at København (Figs. 255 and 366). (*c*) Which area has better access to the ocean highway? (*d*) Why is the one body of water surrounded by a farming region, the other by a region covered with tundra and scrub forests? (*e*) Which of the two is closed to navigation during much of the year?
3. How do the Low Countries profit by their position? (*a*) Which are the Low Countries? (*b*) What rich manufacturing areas are near by? (*c*) What occupations in the Low Countries can contribute to the support of the manufacturing areas? (*d*) Why are the Low Countries well situated for transportation facilities? (*e*) Which ones have areas below sea level? (Fig. 367.)

FRANCE AND THE LOW COUNTRIES

138. FRANCE: A COUNTRY OF MANY CONTRASTS

THE LESSON FORECAST

1. Why France is advantageously located for trade.
2. How the surface features favor the development of transportation.
3. The chief crops and where they are produced.
4. Why manufacturing thrives in France.
5. How farming is carried on.
6. Why Paris has become a great city.
7. Why the Riviera is famed.
8. Problems of the French people.

The favorable location of France. France is fortunately located for commerce and trade, extending as it does from the Bay of Biscay and the English Channel to the Mediterranean, and facing Great Britain across the narrow Strait of Dover. Its western ports give it access to the Atlantic, while Marseille on the Mediterranean is the natural center for trade with Africa and with Asia.

Because of its easy connections by rail and river routes with its neighbors on the continent of Europe, France has a large trade by land. The conditions, however, that favor land trade give France a poor protection from other nations that in the past have been at war with it.

France has important possessions in Africa and Asia and owns a number of islands in the West Indies and in the Pacific. Thus, like the United Kingdom, it has colonies from which it can secure many products and which also serve as markets for home products.

Advantages of climate, surface, and transportation. France is especially fortunate in its summer climate and in the nature of its surface features. The climate is moist and warm in summer, like that of Washington and Oregon, except along the Mediterranean

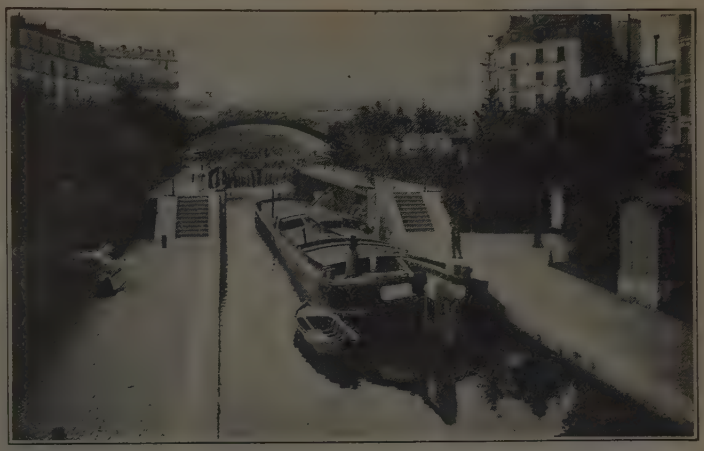


FIG. 352. **Locks in a French canal.** France is covered with a network of canals such as this. What kind of freight is usually carried by canal? Are you looking up or down this canal? Study the picture. Where are the gates of the lock? Can you tell whether they are open or closed? Do you think the boat is going into the lock or coming out? How can you tell?

Notice the stone bridge in the background of the picture. Do you know of what material such a bridge would probably be built in America?

H. Armstrong Roberts

FIG. 353. **Threshing time on a farm in Brittany.** Brittany is the peninsula at the northwest corner of France lying between the Atlantic and the English Channel (Fig. 325). At the tip lies the chief naval port of France. Learn its name.

Compare the methods of threshing seen in this picture with those used in the United States and Brazil (Figs. 184 and 290). What kind of power is being used here? In which picture do we see the most work being done by hand? Which farm uses the largest machines? Notice the women at work. Where else have we found women doing farm work?

where the summers are dry like those of southern California. Thus France has a variety of climates which make it possible to raise many different crops.

The highest portion of France is in the south-central section, but here the altitudes do not exceed those of the White Mountains of New Hampshire. Rivers with gentle grades flow out in all directions. These rivers are so connected by canals that water transportation is possible in almost any direction (Fig. 352).

The Rhone River opens out to the port of Marseille, the Seine flows through Paris, the Rhine through other countries to the North Sea, and the Loire and Garonne to the Bay of Biscay. These river valleys, some of them centers of active industry, are all land routes of great importance, giving France unusual facilities for interior and foreign trade.

How the farming land is used. Wheat is grown generally throughout the country for home use, while corn is grown in the drier southwest, and oats, barley, and rye in the cooler northern areas and on the central plateau (Fig. 353). Potatoes and sugar beets are also important crops in the northern sections, which have favorable summer rainfall and temperatures for growing these root

Ewing Galloway

FIG. 354. **Scene at the cattle market of St. Gaudens, France.** St. Gaudens is about fifty-seven miles southwest of Toulouse. Locate it on the map (Fig. 315). Near what river is it? What important range of mountains is near by?

Do you think the cattle in the market are being sold for their meat or milk, or are they work animals? How can you determine? Why are they yoked together by two's? What advantage would there be in buying them in pairs? Judging from the number for sale, do you think most of the farmers near St. Gaudens use oxen in their farm work?

crops. Horses, for which northern France is famous, and cattle and sheep are raised in great numbers (Fig. 354).

France is the leading wine-making country of the world, and grapes for making wine are grown everywhere in southern France, where the soil is good and the autumn season warm. Different provinces are known for their special kinds of wine, but the region of the Rhine, the valley of the Rhone, and the Loire are especially famous for the quality and abundance of their wines. The Rhone Valley has long been famous for the raising of silkworms, and the region bordering the Mediterranean is renowned for its olives, table grapes, and other fruits, and nuts which remind one of California.

Advantages for manufacturing. Because of its many natural advantages the industrial growth of France has been rapid. With available iron and coal, and with vast possibilities in the development of water power, France has become an important manufacturing country. It specializes in textiles of various kinds. Alsace-Lorraine, once a part of France and later belonging to Germany, again became French territory after the World War. This territory, with a large population and with rich deposits of coal, iron, and phosphates, is a very valuable part of France, partly because of its mineral wealth, so much needed by French manufacturers. Most of the textile mills are found in northern and eastern France because here raw materials are easily obtained. The finished products are largely exported. The French are noted for their weaving and spinning, and specialize in fine linens, cotton, laces, silks, and other fabrics which require patience and great skill in making. With pure running water and with raw silk produced near by, Lyon naturally became the center of the silk industry.

The people and their work. More than half of the people of France are engaged in farming, most of them living in villages and working small plots of ground. Thus France is dotted with villages and small towns, with few remote homes such as are found throughout our country.

The French are an industrious people, and the farmers raise good crops on their small farms. Most of the work is done by hand, and large farm machines are little used. The people are noted for their interest in art and music. Many of their cities, some of which are very old, are famous for their stately buildings, art galleries, and museums.

Ewing Galloway

FIG. 355. **An interior view of one of the leading shops of Paris.** In the picture is shown a part of the silk department. Can you tell where the light comes from in this store? If you have ever visited a large department store in America, tell how it was lighted. Which plan do you think would cost the least? What other advantages might there be in having daylight in the silk department?

How are the goods displayed in this shop? What has been done to make the store attractive?

Paris is famous for its fine shops, for the people who visit Paris always wish to buy new clothes there. Do you know why people like to buy clothes made in Paris?

The cities of France. Paris, the capital, is the chief city of France and also one of the five great cities of the world (Figs. 355 and 356.) Although hampered in the development of direct ocean commerce because of its distance from the sea, it has rail connections in every direction by routes which pass through low gaps in the surrounding hills. It also has water transportation on the Seine. In early days it was easily defended because of its position on an island. But today the city extends far beyond the island. Because of its favorable location it became the first city in trade and in manufacture, especially of hand-made goods. It also leads in its opportunities for education, especially the study of art.

Lyon, the third city in size, is the center of the silk industry in France and the greatest center of silk manufacturing in the world. A part of the raw materials used are produced near by. Lyon lies near Marseille, through which raw silk can be readily imported from Italy and eastern Asia. Its position near easily accessible coal supplies and electric power has made possible its great development in manufacturing industries.

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FIG. 356. **Paris and its suburbs.** Name the river flowing through Paris. How many railroads come into the city? Notice the tiny scalloped band circling part of the city. This is the old wall. Find out what use has been made of the space occupied by this wall.

Marseille, the second city in size, is the leading port of the country because of its large trade with Africa and Asia. It has many varied manufactures depending to a large extent upon imported raw materials such as wheat, hides, and vegetable oils.

Photo by Underwood & Underwood, New York

FIG. 357. **An air view of Bordeaux, France.** Find Bordeaux on the maps (Figs. 315 and 325). Notice the body of water at the upper left in the picture and see if you can name it. The building in the center is the cathedral of St. André. Aside from the cathedral, how many stories has the tallest building you can see? Would there be taller buildings in an American city of the same size? **Can you give any reason why American cities have taller buildings than European cities?**

Bordeaux (Fig. 357), the chief wine-exporting port, is the center of trade with South America and the west coast of Africa. Le Havre, on the North Sea, is the port which serves Paris. It is the greatest cotton-importing city on the Continent, which means that it leads in trade with our country. Other manufacturing cities of note are Rouen, especially noted for its manufacture of cottons in many forms; Lille, famous for its linens; St. Étienne, which manufactures ribbon; and Limoges, widely known for its porcelains and fine earthenware.

One of the famous cities of France is Nice, which, because of its location, has a delightfully warm, dry winter climate. It lies at the western end of the Riviera (Fig. 367), famous as a winter resort. The Riviera lies partly in France and partly in Italy. Its excellent climate is due in part to its location on the warm Mediterranean and in part to the protection from cold, northerly winter winds afforded by the highlands of the Alps. Because of its many points of historic interest, its famous cities and pleasure resorts, France is visited annually by thousands of tourists who must be cared for. Tourists are a large source of income to the people of France, as they are in Switzerland and many parts of our country.

Problems of the French people. On the west France is naturally protected from other nations by the ocean and on the south

by the high ranges of the Pyrenees. But on the east there is no such natural protection, and for this reason France has always felt obliged to keep a large and expensive standing army as protection from invasion. It is highly necessary, therefore, that France keep peace with its neighbors, and also that its neighbors maintain peace with each other. The problem of maintaining peace is an ever-present one with the French government.

In time of peace France can devote more attention to building up its industries and commerce, and to increasing the amount of food and raw materials that can be raised at home. It can also give more time to the education of its people.

139. BELGIUM: A FAMOUS LITTLE COUNTRY

THE LESSON FORECAST

1. Where the lowlands and the highlands of Belgium are located.
2. Why Belgium is called a buffer country.
3. How the people are using the land and other resources.
4. The chief cities of Belgium.
5. Problems that confront the Belgian people.

The disadvantages of Belgium's position. Southern Belgium is a rugged area rich in coal and iron ore, but northern Belgium is a lowland that connects the lowland areas of France with the broader lowlands to the east. This narrow area forms a gateway not only for trade and travel but unfortunately also for armies in time of war. It was through this gateway that the German armies passed at the beginning of the World War just as have many other armies of other wars in years gone by. This lowland is one of Europe's great battlegrounds, and here more than a hundred years ago was fought the battle of Waterloo. Because of this gateway and because it lies between larger and stronger nations, Belgium has always been a buffer state.

How the people make a living. Belgium, which has an area about equal to that of Maryland, is the most densely populated country of the world. Only about one-half of the land is under cultivation, but farming is highly successful, large quantities of wheat, oats, rye, potatoes, and sugar beets being grown. Flax has long been a leading product. Horses are also raised in large numbers. But Belgium, with an abundance of coal and iron, is primarily a manufacturing country, and imports great quantities of food and raw materials. These materials include wool from the Argentine Republic and cotton from our country. The chief exports are textiles, iron and steel goods, glassware, chemicals, and beet sugar.

The people and cities of Belgium. The Belgians are an industrious people loyal to the government which is managing the affairs of the country so as to develop the resources effectively. Few of the people emigrate to other lands, and the country is continually growing stronger.

Brussels (Bruxelles), with a population about equal to that of St. Louis, is the capital and chief railway center. It manufactures laces and other fine goods but is chiefly important as the seat of the government.

Antwerp (Anvers), although situated several miles from the ocean on the Scheldt River, is the chief port. It is not only a port of trade with America, but the point at which the imports from the Belgian Congo in Africa are reshipped to other countries. Antwerp is a great market for ivory.

Ghent (Gand), because of its position, is well located for the manufacturing of cotton goods, linen, and iron, and Liége, being near coal supplies, is also a flourishing manufacturing city (Fig. 358).

Problems of the Belgian people. Belgium, like others of the densely populated industrial countries of Europe, always faces the problem of securing sufficient food and raw

OROC

FIG. 358. **An air view of Liége, Belgium.** Here the river divides, leaving an island on which part of the city is built. What is the name of the river? (Fig. 325.) Look carefully at the bridges. Do they tell you whether or not the river is navigable for large boats? Why are the bridges so close together? Liége lies in a densely populated region rich in coal and iron. Do these facts account for its being one of the largest manufacturing cities in Europe?

materials to keep its factories going. But its greatest problem is that of building up and increasing its industries and of bringing back to the country the general prosperity that was enjoyed before the World War. Belgium, with many miles of seashore developed as resorts, is one of the great summer playgrounds of Europe. Can more people be attracted each year to these resorts and thus add to the income of the people of Belgium?

140. THE NETHERLANDS: THE GIFT OF THREE LARGE RIVERS

THE LESSON FORECAST

1. The value of the distant possessions of the Netherlands.
2. How farming is carried on.
3. How the Netherlands increases the extent of its farming land.
4. Why manufacturing has decreased in the Netherlands.
5. The leading cities of the Netherlands.
6. Problems of the Dutch people.

Making a living in the Netherlands. The Netherlands is a small country only a little larger than Belgium, but it controls vast tropical possessions in the East Indies (Fig. 478). These possessions are of great value to the home country. Its West Indies possessions include Surinam, or Dutch Guiana, and the island colony of Curaçao.

The Dutch, as the people living in the Netherlands are called, are both an agricultural and a commercial people. Farming is successful because of the rich soils of the deltas of the Rhine (Fig. 359), the Meuse, and the Scheldt rivers. Much of the land has been reclaimed from the sea, which is kept out by dikes (Fig. 360). The rivers and

FIG. 359. A farmhouse in the Netherlands. This is a scene along the Old Rhine, the name given one of the old channels of the Rhine. The Old Rhine flows into the North Sea at Leiden (Fig. 325). Its lower course is so sluggish that it finds its way to the sea through a narrow canal.

What does the physical map show as to the altitude of this region? (Fig. 313.) Can you explain why the land here is valuable for agriculture? What early colonists of America sailed from Leiden? (Refer to your history.)

What do the good road and well-kept farmhouse tell you about the prosperity of this region?

FIG. 360. Reclaimed land in the Netherlands. This is an airplane view in the part of the Netherlands lying below sea level (Fig. 367). Notice the number of windmills. Can you tell how they help keep the water from the land? What is the purpose of the large canals and of the smaller channels in the fields?

Reclaimed areas such as the ones you see here are known as polders. Consult your dictionary for the meaning of polder. Why do the Dutch work to wall out the sea and reclaim this land? River dikes are sometimes as necessary as sea dikes. Do you know why?

the many canals form routes for trade. The low-lying land, which permits a free sweep of the wind, makes possible the general use of windmills for power and for pumping water. Great crops of cereals and potatoes are raised. The growing of tulip, hyacinth, and other flowering bulbs, which for years have been exported in large quantities, is an extensive industry (Figs. 23 and 362). Dairying is, however, the most important phase of farming, and dairy products, especially butter (Fig. 364), cheese, and condensed milk, are produced in large quantities.

Before the use of machinery in textile manufacturing the Dutch were leaders in the making of cloth. Today, owing to the lack of coal, iron, and power, manufactures have not developed to any great extent. Fine pottery, sugar, and textiles, especially linens and woolens, are the best-known products. It is necessary, therefore, for the Netherlands to import manufactured goods while Belgium exports them.

The leading Dutch cities. Amsterdam is connected with the North Sea by a ship canal and has splendid connections inland

FIG. 362. **Hyacinth growing near Haarlem.** The raising for export of bulbs of hyacinths and tulips is an important industry in the Netherlands. These plants grow especially well in the rich, moist soil of the areas known as polders. The polders are areas of reclaimed land that once was lake bottom. How do the Dutch farmers keep the polders from being flooded again by the rivers?

Most of the farms in the Netherlands are very small. It takes much care and much hard work to grow flower bulbs. Why do so many farmers raise them instead of raising wheat or potatoes?

FIG. 361. **A view in the harbor of Rotterdam.** This flourishing city is located on a tidal river (Fig. 325), but the channel has been deepened and widened so that the largest ocean steamers can easily reach the docks here. Can you tell what the large pipes on this wharf are used for? Look for previous illustrations showing such dock machinery. Do you think this ship is being loaded or unloaded? Find out how Rotterdam compares in importance with other cities in the Rhine Valley.

both by water and by rail. It is the leading manufacturing city, specializing in the cutting and polishing of diamonds, the diamonds coming from the mines of South Africa.

Rotterdam is the chief port not only of the Netherlands but of the Rhine Valley (Fig. 361). Its imports, however, are far greater than its exports, for the Dutch import great quantities of raw materials and food to be shipped overland to other countries of central Europe.

The Hague ('s Gravenhage), a beautiful residential city, is the capital. It has little commerce or manufacturing and is probably best known as the seat of the International Court that meets at the Palace of Peace.

Problems of the Dutch people. The rivers which drain the Netherlands and bring it

Courtesy Consulate General of Denmark

FIG. 363. **A farm in Denmark.** Much grain, especially oats and barley, is raised in Denmark and the near-by islands. Does Fig. 364 tell you about another important industry here? Are dikes needed in Denmark as they are in the Netherlands? Explain your answer.

Try to find out how the Danish government has helped the farmers. In what ways does our government help the farmers?

riches flow down from other countries. The inland countries use these rivers for trade, and it is important, therefore, that the other nations of central Europe maintain friendly relations with the Dutch. The Rhine, the great inland water route of northern Europe, is so important that by agreements between the leading nations it is kept open for commerce by all nations, even in time of war. It is an internationalized river. The population is steadily increasing and more and more land is being reclaimed from the ocean. One of the most important projects is reclaiming large areas of the Zuider Zee (Fig. 367).

The Dutch always face the problem of keeping the larger share of the trade of their East Indies possessions, which furnish food, rubber, and other materials much in demand by the people of western Europe.

141. DENMARK: THE GUARDIAN OF THE BALTIC

THE LESSON FORECAST

1. The importance of the Kiel Canal.
2. Climate and surface features.
3. How the government has helped the Danish farmers.
4. The location and importance of København.
5. Relation of Denmark to Greenland and Iceland.
6. Problems of the Danish people.

Denmark's key position. Denmark, about equal in area to Massachusetts and New Hampshire combined, occupies the peninsula

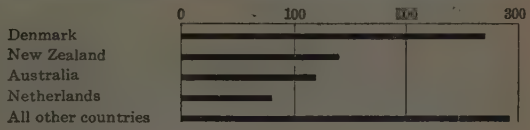


FIG. 364. **Rank in millions of pounds of the countries which lead in the exportation of butter**

of Jutland and adjacent islands between the North Sea and the Baltic Sea. Owing to its position, all vessels plying between these bodies of water must pass near Denmark, and Denmark long took advantage of its location to levy toll on all passing vessels.

This practice has ceased, thus stimulating trade. Moreover, the Kiel Canal (Fig. 372) has shortened the distance from one sea to the other and has made it unnecessary for for vessels to sail through Danish waters.

How the people make a living. Denmark is a low-lying country with sandy hills and shifting sand dunes on the west. Throughout the rest of the country the soil is excellent. The climate is warm and moist in summer. Under the careful and intensive farming methods of the Danes large crops are produced (Fig. 363). Denmark is without both mineral and forest resources.

About 80 per cent of the land is productive, and wheat, barley, oats, and potatoes are raised in great quantities. These products are used in part to feed millions of domestic animals and fowls. The government has encouraged farming in many ways by establishing schools, by assisting in marketing crops, and by preventing the importation

Courtesy Consulate General of Denmark

FIG. 365. **A view of the fish mart at København, Denmark.** Into what near-by waters do you think such small fishing vessels as the ones moored here can venture? (Fig. 367.) Can you name the different kinds of fish that are found in these waters? (Fig. 70.) Can you explain why it is not necessary for so many people in Denmark to follow the sea as in Norway or Great Britain?

Why is the city of København especially well located to benefit from the flourishing trade between the countries surrounding the Baltic Sea and other parts of the world? See if you can find out why there is no important seaport on the western coast of Denmark.

of those agricultural products which compete with the products of Denmark.

Danish eggs, butter (Fig. 364), hams, bacon, and other farm products are shipped all over the world, but the United Kingdom and Germany are the chief buyers. Manufacturing is increasing rapidly and fishing gives employment to several thousands of people. But Denmark is an agricultural country rather than a manufacturing one.

The cities and dependencies of Denmark. København (Fig. 365), the capital and chief port, has a population about equal to that of Boston. It is connected by a train ferry with Malmö, Sweden, and its importance as a railway terminus and port is increasing.

Denmark has only the large colony of Greenland (Fig. 80) and The Faeroes, an island group in the North Atlantic. From Greenland it receives valuable imports of fish, furs, and other products of the cold North. Denmark once owned Iceland, but that island is now an independent country with a ruler appointed by the Danish king.

Problems of the Danes. Denmark's most serious problem is that of keeping its markets for its home products. Can it continue to raise agricultural products at a cost that will enable them to compete with the same products from other countries? With little coal and water power, how can Denmark increase its manufactures so as to produce more of the goods needed for home use? Can the fishing be increased and the products exported to other markets? Can markets at greater distances be found so that Denmark will be less dependent on Germany as a market for its goods? These are important problems for Denmark to solve.

SOME RELATED PROBLEMS

1. How do the surface features of France encourage domestic trade?
2. What attractions in France bring many tourists to the country?
3. Where in the United States is the coastal climate like that of western France?
4. Why do the Netherlands and Denmark raise dairy cows rather than beef cattle?
5. How do the Dutch profit from certain of their possessions in the East Indies?
6. Why is it an advantage to France to have mountains in the eastern rather than in the western part of the country?
7. Why are most of the important cities of France found in river valleys?
8. State the advantages and disadvantages of Belgium's position in a lowland gateway.

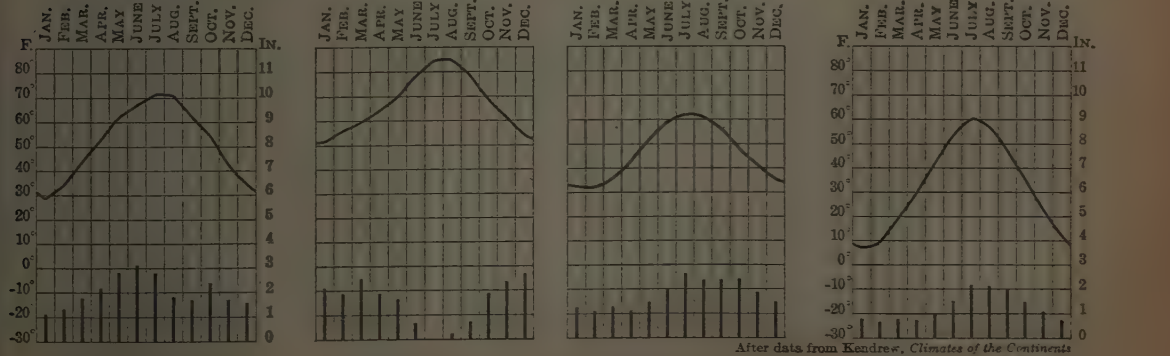
COUNTRIES OF THE GREAT LOWLAND PLAIN AND CENTRAL UPLAND (*Continued*)

COUNTRIES OF CENTRAL EUROPE

142. WHAT THE MAPS, TABLES, AND GRAPHS SHOW

Problems:

1. Why does the Central Upland of Europe support a dense population? (*a*) The Central Upland is north of the Alps and extends from the Garonne River to the Oder River. What countries are located wholly or partly within this upland? (*b*) What rivers flow from or through this upland? (*c*) What does the population map show as to density of population? (*d*) What large cities are in or near the region? (*e*) Why is the rainfall favorable for agriculture? (*f*) What minerals for manufacturing are available within the region? (*g*) What agricultural products are raised in the Central Upland?
2. How do some of our North Central states compare with the countries of this part of Europe? (*a*) How does the combined area of Iowa, Illinois, and Missouri compare with that of Germany? How do they compare in population? (See Appendix.) Compare them as to amount of farm land. Where should it be easier to make a living? (Figs. 176 and 367.) (*b*) How do Wisconsin and Czechoslovakia compare in area and population? Montana and Poland?
3. Compare the rainfall and temperature of København with that of Arkhangel'sk. (*a*) Compare also Seville with Beógrad. (*b*) Compare Beógrad with Arkhangel'sk. (*c*) Compare Seville with København (Fig. 366). (*d*) Explain the similarity and the differences. (*e*) Does the physical map (Fig. 313) help you? (*f*) In what country is each of these cities?
4. Why are some of the countries of central Europe not well located for carrying on foreign commerce? (*a*) Name four that have no seacoast. (*b*) Through what countries must the foreign trade of these four pass? (*c*) What inland water routes may serve Czechoslovakia, Austria, and Hungary? What ones may Switzerland use? (*d*) What country has been cut in two to give Poland an outlet to the sea highway? (See Map, Fig. 315.)
5. What are the six large rivers that flow from the Highlands and Central Upland? (*a*) Trace them and tell what countries they serve as trade routes. (*b*) Through what waters do they connect with the great ocean routes? (*c*) Name and locate the large cities on each river.
6. Trace on map Fig. 315 the five great water routes that serve the Soviet Republic to the south and west. (*a*) From the character of these regions, which of these routes is the most important?
7. Why are east-and-west railroad lines needed in Europe?



After data from Kendrew, *Climates of the Continents*

Beógrad, Yugoslavia
Alt. 450 ft. Temp. 52.0°
Rainfall 24.3 in.

Seville, Spain
Alt. 66 ft. Temp. 67.3°
Rainfall 18.6 in.

København, Denmark
Alt. 16 ft. Temp. 45.9°
Rainfall 21.5 in.

Arkhangel'sk, U. S. S. R.
Alt. 50 ft. Temp. 32.5°
Rainfall 15.3 in.

FIG. 366. **Average annual temperature and rainfall for four cities of Europe**

NORWAY
SWEDEN
FINLAND
DENMARK
ESTONIA
LATVIA
LITHUANIA
POLAND
EAST PRUSSIA
NORTH SEA
BALTIC SEA
Gulf of Bothnia
Gulf of Finland
Gulf of Riga
Lake Ladoga
Stockholm
Oslo
Helsinki
Leningrad
Hamburg
Berlin
Bremen
Hannover
Magdeburg
Stettin
Danzig
Kattegat
Skagerrak
Malmö
Copenhagen
Gothenburg
Aalborg
Esbjerg
Frederikshavn
Kristiansand
Arendal
Stavanger
Bergen
Trondheim
Narvik
Uppsala
Karlstad
Örebro
Linköping
Norrköping
Jönköping
Västervik
Visby
GOTTLAND
ÖLAND
Kalmar
Karlskrona
Helsingborg
Helsingör
Ystad
Trelleborg
Kristianstad
Halmstad
Varberg
Lysekil
Uddevalla
Vänersborg
Skövde
Falun
Gävle
Sundsvall
Östersund
Luleå
Umeå
Skellefteå
Kemi
Tornio
Oulu
Kajaani
Kuopio
Joensuu
Lappeenranta
Mikkeli
Jyväskylä
Tampere
Turku
Pori (Björneborg)
Rauma
Hanko
Helsinki
Kotka
Vyborg
Petrozavodsk
Murmansk
Archangel
Lake Onega
Lake Chudskoye
Pskov
Narva
Tallinn
Pärnu
Riga
Jelgava
Liepaja
Ventspils
Daugavpils
Kaunas
Klaipeda
Panevezys
Siauliai
Vilnius
Grodno
Brest
Minsk
Mogilev
Molodechno
Baranowicze
Pinsk
Bialystok
Lomza
Suwalki
Olsztyn
Elbing
Allenstein
Torun
Bydgoszcz
Poznan
Frankfurt
Leipzig
Dresden
Chemnitz
Halle
Brunswick
Wolfsburg
Kassel
Cologne
Aachen
Duisburg
Dortmund
Essen
Wuppertal
Amsterdam
Rotterdam
The Hague
Arnhem
Utrecht
Groningen
Leeuwarden
Antwerp
Brussels
Ghent
Liège
Luxembourg
Metz
Nancy
Strasbourg
Mannheim
Karlsruhe
Stuttgart
Nuremberg
Regensburg
Munich
Augsburg
Ulm
Freiburg
Basel
Zürich
Bern
Geneva
Lausanne
Innsbruck
Salzburg
Linz
Vienna
Graz
Klagenfurt
Prague
Pilsen
Brno
Ostrava
Olomouc
Pardubice
Hradec Kralove
Ceske Budejovice
Karlovy Vary
Usti nad Labem
Liberec
Cheb
Plzen
Bohemia
Moravia
Silesia
Slovakia
Bratislava
Trnava
Nitra
Trencin
Zilina
Banska Bystrica
Presov
Kosice
Poprad
Tatry
Katowice
Gliwice
Zabrze
Bytom
Sosnowiec
Czestochowa
Radom
Kielce
Lodz
Pabianice
Piotrkow
Skierniewice
Warsaw
Plock
Ostrolenka
Siedlce
Lublin
Kowel
Rovno
Zhitomir
Kiev
Vinnitsa
Tarnopol
Lwow
Przemysl
Rzeszow
Tarnow
Krakow
Jaroslaw
Jaroslawl
Kalinin
Smolensk
Gomel
Mogilev
Orsha
Vitebsk
Polotsk
Pskov
Ukraine
Union of Soviet Socialist Republics
Helgoland
Heligoland
Bornholm
Gotland
Oland
Aland
Kurischer Haff
Frisian Is.
N. Frisian Is.
Lake Peipus
Lake Ilmen
Valdai Hills
Dvina R.
Vistula R.
Oder R.
Elbe R.
Rhine R.
Danube R.
Weser R.
Ems R.
Moselle R.
Main R.
Neckar R.
Inn R.
Drava R.
Sava R.
Tisza R.
Dniester R.
Dnieper R.
Western Dvina R.
Pripet R.
Bug R.
San R.
Oka R.
Volga R.
Don R.
Kama R.
Vyatka R.
Northern Dvina R.
Pechora R.
Ob R.
Irtysh R.
Tobol R.
Ishim R.
Ural R.
Caspian Sea
Black Sea
Sea of Azov
Aral Sea
Lake Balkhash
Lake Issyk-Kul
Lake Baikal
Lake Aral
Lake Chany
Lake Tengiz
Lake Alakol
Lake Zaysan
Lake Ubsa
Lake Khubsugul
Lake Khanka
Lake Hanka
Lake Biwa
Lake Constance
Lake Geneva
Lake Neusiedl
Lake Balaton
Lake Maggiore
Lake Como
Lake Garda
Lake Lugano
Lake Iseo
Lake Orta
Lake Varese
Lake Trasimeno
Lake Bolsena
Lake Vico
Lake Bracciano
Lake Albano
Lake Nemi
Lake Averno
Lake Fucino
Lake Lesina
Lake Varano
Lake Trasimeno
Lake Bolsena
Lake Vico
Lake Bracciano
Lake Albano
Lake Nemi
Lake Averno
Lake Fucino
Lake Lesina
Lake Varano

FIG. 367. A Map of Central Europe

Courtesy German Tourist Information Bureau

FIG. 368. **A German farmstead.** The farm to be seen in the picture lies in that portion of the Great Lowland Plain which borders the seashore of northwestern Germany. The marshy plains in this region have been reclaimed by canals and in some places by dikes. Agriculture as carried on here by the thrifty German farmers has been successful.

What industries have you found are carried on elsewhere in the lowlands of Europe? Compare this scene as to slopes and crops with the one shown in Fig. 369.

143. GERMANY: A NEW-OLD COUNTRY

THE LESSON FORECAST

1. The lands Germany lost as a result of the World War.
2. How and where food crops are produced in greatest abundance.
3. The need to import foods.
4. How and where animals are raised.
5. Reasons for the large development of manufacturing.
6. How Germany is provided with trade routes.
7. The dense population of Germany.
8. Why Berlin is a great city.
9. The other chief cities of Germany.
10. Problems confronting the German people.

How the World War affected Germany. Germany before the World War was a great empire with large possessions in Africa and the East Indies. It was one of the great commercial and manufacturing nations of the world. As a result of the war, Germany lost her foreign possessions and some parts of her home territory. This included areas rich in coal and iron necessary for manufacturing. The nation was also called upon to make large payments to other countries for the damages caused by the war. As a result the country faces many big problems and, having little to sell to other countries, has first to secure raw materials and develop its industries. This the people are doing rapidly.

The German people have long been known for their industry and their ability to make use of the best methods in manufacturing and in agriculture. This ability was not lost during the war, and hence the people have been able to build up new industries rapidly. Germany is therefore speedily regaining her prominence as an industrial nation.

How the land is used. Most of northern Germany is a plain (Fig. 368) with poorer soil and a less favorable climate than are found in the countries farther west near the ocean. But by the use of fertilizers and by careful farming methods many parts of this plain are made to produce excellent crops of wheat, rye, oats, sugar beets, and potatoes. In places where the land is not suitable for farming, forests have been planted. These are well cared for and practically supply the needs of the country. Although Germany raises about three-fourths of all its food supplies, it is still dependent upon imports for much of its wheat and some other necessities.

Southern Germany is mostly an upland with areas of good soil in some of the valleys (Fig. 369). Here hops, for making beer, and wine grapes are grown, and in the southwest tobacco is raised.

Germany also raises much live stock, especially swine, cattle, and sheep. Sheep are

Courtesy German Tourist Information Bureau

FIG. 369. **A view in the valley of the Saar.** The picturesque little town shown here is Saarburg. It lies in a beautiful scenic region of western Germany close to the border of Luxembourg (Fig. 367). Study the picture closely and on the crest of the hill in the background you will see a ruined castle. Can you tell why barons of the Middle Ages built their castles high on the hills rather than in valleys? How do you think the people in this region make a living?

raised in largest numbers in the drier regions. Cattle and horses are found especially where a moist climate makes possible good summer pastures. Swine are raised especially in the oak and beech forests where in autumn the animals feed and grow fat on the nuts.

Why Germany is a manufacturing country. Germany has rich deposits of coal and iron which explain the growth of manufacturing, especially of iron and steel (Fig. 370). The products include ships, machinery, tools, and many articles requiring great skill and patience in the making. Germany is also rich in salt deposits of many kinds. These are used in the great chemical industries which have been partly developed by electric power (Fig. 371). The best-known chemical products are fertilizers and dyes, and in the making of these Germany has always led the world.

Advantages for trade and transportation. Because of the wide distribution of its resources Germany has many important

Courtesy German Tourist Information Bureau

FIG. 370. **Smelting furnaces in the Ruhr Valley.** One of Germany's great coal fields lies in the Ruhr Valley and here are the industrial towns of Essen, Dortmund, and Düsseldorf (Fig. 367). Here, too, are the famous Krupp works. Try to find out what the chief products of this region are.

manufacturing cities in different parts of the republic. These cities are connected with each other by excellent railroads, while the rivers and canals make transportation by water easy in almost any direction (Fig. 372). Goods can be easily collected and exported through the great ports of Hamburg

Ewing Galloway

FIG. 371. **A large water-power plant near München.** The city of München lies in the southeastern part of Germany (Fig. 367). The source of the water power for this plant is a lake lying over 2,600 feet high in the northern ranges of the Alps.

This plant, one of the largest in Europe, has a generating capacity of 168,000 horse power. Much of the power generated is used to operate railroads in the vicinity, but more and more is being used for power in factories. Find out why industries in this region are dependent upon water power.

Courtesy German Tourist Information Bureau

FIG. 372. **Locks in the Kiel Canal.** The locks seen in the picture are located at the village of Holtenau at the east end of the canal about a mile and a half from the city of Kiel (Figs. 325 and 367).

Kiel Canal is a sea-level canal, but locks such as these are needed to overcome tidal changes. Can you explain just why locks are necessary between the canal and the outer harbors? What seas are joined by Kiel Canal? Find out what long and dangerous passage Kiel Canal helps ships to avoid (Fig. 367).

and Bremerhaven. The ports of Antwerp, Belgium, and Rotterdam in the Netherlands are even better situated for commerce, and large quantities of German exports are shipped from these foreign ports.

The people and their cities. In an area only a little larger than that of Washington and Oregon combined, Germany supports a population equal to more than half that of our country. The greater number of the people are found in the industrial regions, which include forty-six cities each of which contains more than 100,000 people.

Berlin is the third largest city in the world, only New York and London outranking it. It is the capital of the country, an important manufacturing city, and a flourishing railroad center. Long the seat of the German government, Berlin (Fig. 373) is a beautiful city famous for its broad streets and imposing buildings.

Hamburg, one of the busiest ports on the continent of Europe, is located on the Elbe River (Fig. 374). Through this city passes the commerce of central Europe, and it leads all ports in trade with the Americas.

In southeastern Germany lies München (Munich), a famous old university city, known for its printing, beer making, and manufacture of scientific instruments.

Leipzig, located in a broad, rich basin, is a railway and canal center and is therefore a market town for the adjoining highland and lowland regions. It is an industrial town, known for the manufacture of pianos, leather products, and books, and has long been a leading publishing center and one of the world's greatest fur markets. It lies near regions where furs are secured, and being near the colder regions of Europe it finds there a ready market for the furs.

Other well-known cities of Germany are Köln (Cologne), with its famous cathedral; Dresden, noted for its porcelain wares; Breslau on the Oder, well situated for trade; and Essen, in the Ruhr Valley, one of the world's great steel-making cities. Essen is closely connected by rail with all the coal and iron towns of the valley.

Problems of the German people. As a result of the World War, Germany lost its leadership in manufacturing and commerce and owes a large debt to other nations, part of which must be paid each year. The great problem of Germany is, therefore, so to increase its production of goods that it can make money to pay its debts and still further develop its industries. To make conditions for earning a living so satisfactory that people will prefer to remain in the country and not want to emigrate to other lands is also one of Germany's problems.

144. POLAND: AN OLD NATION WITH A NEW FREEDOM

THE LESSON FORECAST

1. The former greatness of Poland.
2. How the forest and mineral resources are used.
3. Transportation and trade in Poland.
4. Important cities of Poland.
5. Problems facing the Polish people.

The rebirth of an old country. Poland at one time was one of the largest countries of Europe, occupying nearly all the Great Lowland Plain from the Baltic to the Black Sea. All of this territory was later lost. After the World War the sections held by Germany, Russia, and Austria were united to form Poland (Fig. 367), and thus an old country was reborn.

Courtesy German Tourist Information Bureau

FIG. 373. **A view of "Old Berlin."** Along the right bank of the Spree lies the section of Berlin known as "Old Berlin." In the distance you can see the famous Elector's Bridge, which dates from 1692. Does this picture suggest that the Spree is an important stream? How is Spree pronounced?

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FIG. 374. **Hamburg and surrounding region.** What reasons can you give to prove that Hamburg, about ninety miles up from the North Sea, is one of the busiest ports in Europe? Does the map show that it is a great railroad center? Find out which inland country has free use of the Elbe.

Ewing Galloway

FIG. 375. **Harvest time in Poland.** Most of the farmers in Poland live in villages and go out each day to work on their near-by small farms. The village seen in the distance in the picture is near Warszawa. In what great river basin does much of Poland lie? (Fig. 367.) Is the climate of this country favorable for agriculture? Is the surface flat or hilly?

Notice the man cutting the grain. What is he using? Explain what the other workers are doing.

How the agricultural land is used. Poland is mostly a low-lying plain with rather poor soil but with a warm, moist climate favorable for growing such crops as rye, barley, oats, wheat (Fig. 375), beets, and potatoes These products are raised in great quantities, as they are in other parts of Europe that have a similar soil and climate. Hemp and hops are also grown. More than half of the people are engaged in agriculture, raising, in addition to food crops, also cattle, horses, sheep, and swine. Sugar beets are grown and are used largely in the making of beet sugar, an important manufacturing industry in many sections of the country.

Reasons why manufacturing industries should succeed. Poland is fortunate in having extensive forests, from which are cut each year great quantities of timber, much of which is used in woodworking establishments. Poland is also rich in coal and iron deposits which have hardly been touched. The iron is beginning to be used in the making of steel, and the coal furnishes power for textile industries. There are extensive and valuable deposits of rock salt.

Facilities for transportation and trade. Because it is a lowland, Poland naturally has excellent transportation routes both by rail and by water. It has access to the free port of Danzig on the Vistula River. The region bordering the lower portion of the river is virtually a corridor or narrow passageway through Germany. This passageway separates East Prussia from the remainder of Germany.

Cities of Poland. Warszawa (Warsaw), the capital, centrally situated, is the chief city and leads both in trade and in textile manufacturing. Lodz is an important textile city. Krakow (Cracow), because of its location on the plain and at the foot of the mountains, is the chief trade center of southern Poland. It should be familiar to us, for it is the burial place of Kosciusko, a Polish patriot who, as history teaches, served as an officer in our army during the Revolution.

Problems of the people. Poland was long a buffer state between Germany and Russia and has often suffered from being a battleground for these nations. In the World War much of its land was laid waste and many of its industries were almost destroyed. Now that it is a republic it must build up its industries and develop its resources if it is to become a strong nation. The resources, if wisely used, are sufficient to support great numbers of people. In former years a great number of Poles came to America, most of them settling in the mining and manufacturing sections of the country rather than in the agricultural sections. Hence Poland's most important problem is to keep its people from emigrating.

By Burton Holmes, from E. Galloway

FIG. 376. **A farmstead in Czechoslovakia.** Judging from the size and general appearance of the farmhouse seen in the picture, do you not think the owner of the farm must be prosperous? What do you think are probably the chief crops raised in this country? What can you find in the picture which shows that timber is plentiful in this region?

Can you judge somewhat of the size of the farm from the nature of the surrounding land surface? Give the reasons for your answer. What mountains nearly surround the western part of Czechoslovakia? What mountain ranges cross the eastern part? (Fig. 367.)

145. CZECHOSLOVAKIA: A LAND OF MANY FARMS

THE LESSON FORECAST

1. Territory from which Czechoslovakia was formed.
2. The land and the crops produced.
3. The advantages and disadvantages of Czechoslovakia's location.
4. Reasons for the growth of manufacturing.
5. The leading cities.
6. Problems for the people to solve.

The country and its people. Another new country that has existed only since the close of the World War is Czechoslovakia. It has an area a little less than that of Iowa while it is almost as densely populated as the manufacturing state of Connecticut. It is made up of territory that formerly belonged to Germany and Austria. Its people almost all speak Slavic languages.

How the people make a living. Czechoslovakia is one of the richest farming countries in Europe (Fig. 376). Wheat, oats, barley, rye, potatoes, and sugar beets are the chief crops raised on its farms, which number nearly four million. Beet sugar is made in large quantities, most of it being exported. The production of beer and other alcoholic beverages is very great. The country exports immense quantities of foodstuffs to its neighbors.

Since Czechoslovakia has no seaport, ocean commerce must be carried on through other countries. Because of its central location and good rail and river connections, trade with the neighboring states is easily carried on.

Manufacturing is increasing, especially that of textiles, chinaware and pottery, machinery, and food and wood products. Extensive forests furnish lumber for factories and building purposes, while coal and iron are mined in large quantities. Thus it is possible for the country to increase its manufacturing rapidly.

Cities of the country. Czechoslovakia has many cities, of which the capital, Praha (Prague), the largest city, has a population about equal to that of the Twin Cities, St. Paul and Minneapolis. It is situated at the head of navigation on the Moldau, a tributary of the Elbe. Praha is a busy railway center splendidly located for carrying on trade in all directions. It is also a flourishing manufacturing city.

Brno (Brünn), the second city in size, manufactures textiles. It is not so well

Courtesy U. S. Bureau of Foreign and Domestic Commerce

FIG. 377. **The water front at Bratislava, Czechoslovakia.** Lying on the Danube which flows across central Europe for hundreds of miles, Bratislava is fortunate in its location. Can you explain why? (Fig. 367.)

Czechoslovakia by building many dams and canals has greatly improved and extended its waterways. Trace a water route on the Danube from Bratislava up to Rotterdam (Fig. 367). Through what other rivers and what canals will it pass? through what countries? With map and scale of miles try to find out the distance a boat would travel in making this trip and the products that could be profitably carried.

located for trade as is Bratislava (Pressburg) (Fig. 377) on the Danube, for this river is the chief route for water-borne freight.

Problems of the people. Czechoslovakia includes many different groups of people. Some of them still regret that they no longer live under the government of their mother country from which they have been separated to become citizens of a new country. One of the problems of the government, therefore, is to develop among all the people a love for their country, and to make them satisfied and happy by providing still better conditions for making a living.

The problem of keeping peace with the bordering countries which have lost territory to Czechoslovakia is a difficult one. But as a whole the people are well educated, schools and colleges are numerous, and the country is prosperous. National problems should become less serious as the years go by.

SOME RELATED PROBLEMS

1. Why are the waterways of Germany so largely used?
2. Why is the manufacture of toys in southern Germany important?
3. Why is the North Sea more useful to Germany than is the Baltic?
4. Why have several rivers of Germany been internationalized? Explain the meaning of the word internationalized.
5. Why is the climate of Germany less varied than that of France?
6. Why does the position of Germany offer special advantages for trade?
7. What are the advantages of the Kiel Canal to Germany and other Baltic countries?
8. Why may Poland be considered a buffer country?
9. How does Czechoslovakia have two open water routes for ocean commerce?

UNION OF SOCIALISTIC SOVIET REPUBLICS AND THE LITTLE BALTIC COUNTRIES

146. RUSSIA: AN OLD COUNTRY WITH A NEW PLAN

THE LESSON FORECAST

1. The great extent of the country.
2. The surface of the country and how it is drained.
3. Why there is a great variety of climate and vegetation.
4. Why agriculture and its products vary in different sections of the country.
5. What the factories produce and how they are controlled.

6. The importance of petroleum.
7. Why Russia has difficulty in reaching world markets.
8. Location and importance of the chief cities.
9. Problems of the Soviet Republic.

The Soviet Republic: what it includes and its extent. Russia in Europe is only a part of the Soviet Republic, which stretches across Europe and Asia from near the Baltic Sea to the Bering Sea and the Pacific Ocean. Before the World War, Russia was a great empire ruled by a czar. Today it is a group of republics bound together in a union officially known as the Union of Socialistic Soviet Republics. The government is located at Moskva (Moscow). Between Russia in Europe and the Baltic Sea lie five independent countries, once a part of the empire.

The effect of surface and climate upon natural vegetation. Russia occupies the broadest part of the Great Lowland Plain of Europe. There are few breaks in the monotonous evenness of the surface. Even the Valdai Hills, the highest part of the region, from which streams flow in every direction, are only about 1,000 feet above sea level. The Ural Mountains, which form part of the physical boundary between Europe and Asia, are really a gently rolling area.

Over such a flat region the winds sweep with great force and rivers flow gently. Because the country lies so far from the ocean, it is dry and cold in winter, yet not so severely cold as it is farther east in Siberia. Differences in climate in Russia are due almost entirely to distance from the Equator and the ocean. The climate everywhere in the south is dry with warm summers. This is a desert region. Central Russia in Europe in climate and vegetation is much like eastern Montana. North of this grassland area forests abound, as they do north of the dry region of Canada. Still farther north bordering the Arctic is a treeless region of mosses and shrubs known as the tundras (Fig. 494).

Photo by Underwood & Underwood, New York

FIG. 378. **A country home in central Russia.** Winters here are long and cold, but the people who live in this log house will be warm, for the cracks between the logs are stuffed and plastered with moss and clay. Notice how the woman in the foreground carries her milk pails balanced on a long yoke.

Agriculture and its products in different sections. The occupations of the people vary, of course, with the climate and the vegetation. The northern tundra regions are thinly populated and serve largely as pastures for reindeer. South of the tundras lie the forests, sources of lumber and furs. In central Russia (Fig. 378) beyond the forests the soil is rich and easily cultivated. Here are found most of the people. The climate in summer favors the growing of wheat, rye, and other grains which are raised in vast quantities. Rye is much used for bread, while wheat is exported, although the quantities are much less than before the World War when Russia was one of the greatest wheat-producing countries of the world. Many other crops are grown, including flax, the fibers of which are used in making cloth, and hemp, from which rope is made.

In the drier areas where grass is abundant great numbers of cattle, sheep, and goats are raised. Sheep and goats are valued for their skins, as well as for their wool, hair, and flesh. Skins are an important export.

The effect of the World War and the Revolution upon agriculture. For many reasons agriculture in Russia is in a backward state. Many of the people are uneducated and know little about the best farming methods. Before the World War most of the farming was done on large estates and the workers were told just what to do. But after the Revolution the large estates were divided among the people. Since the government is not strong, changes may come at any time and people may lose the results of their labors. This does not encourage them to do their best. As a result of these conditions for a number of years Russia has had to import food. Agriculture, however, is gradually improving. Tools and farm machinery, especially tractors, are being imported from America, and each year crops are being increased.

How manufacturing is carried on. Coal and iron are found near Moskva, and here manufacturing, especially of cottons, linens, and machinery, is being developed. Southern Russia has rich coal fields in the valley of the Donetz (Fig. 315). Russia is also fortunate in being rich in petroleum (Fig. 320), before the World War one of the chief exports of the Empire. Although the oil wells are not worked as they once were, some day they may again prove of great value to the country both for power and for export.

Russia's disadvantages for transportation and world trade. Russia, with its great extent of territory, lacks good transportation facilities, although thousands of miles of railroads have been built. While the great rivers are all navigable for long distances, they do not furnish good routes to the ocean. The rivers flowing north empty into the Arctic and are closed by ice for many months each year. The rivers flowing south are open the year round. They empty into the Caspian Sea which has no outlet, or into the Black Sea. While the Black Sea is connected with the Mediterranean, it is not a good trade route because of the distance from the great trade routes of the Atlantic and Indian oceans. In spite of the vast extent of Russia's territory, therefore, it is unfortunate in having no ports well located for carrying on a large foreign trade.

Russian cities. Russia has a number of large cities, among which Moskva and Leningrad, each with more than a million people, rank first. Moskva, the present capital, is well located for trade and is an important railroad center and the chief manufacturing city (Fig. 379). It is an old city which has grown in importance since the Russian Revolution. Leningrad, once called St. Petersburg and later Petrograd, was the capital of the Russian Empire before the Revolution. It was founded by a great Russian emperor, Peter the Great, to provide a port on the Baltic and thus give Russia an outlet to the Atlantic. The city of Leningrad carries on some manufacturing and also exports agricultural products.

Odessa, on the Black Sea, is the largest city of southern Russia. It may be compared with Duluth, since it lies near the wheat fields and is the chief grain-exporting city of the country.

Kiev, on the Dnieper, is one of the older cities of Russia, to which many people come each year to worship at its shrines. It manufactures flour, beet sugar, and other products made from raw materials produced locally.

Baku on the Caspian Sea, the industrial center for the rich oil fields (Fig. 320), is a great oil-exporting port and also a trading center with Persia and southern Asia.

Problems of the people. The present government, known as the Soviet Republics, is based on a new plan. As yet no one knows whether this plan will work out so that the country will develop and prosper. The government therefore has two great

Ewing Galloway

FIG. 379. **A scene in Moskva.** This old Russian city, long known as Moscow, lies on the river of the same name (Fig. 315). Its numerous gilded domes and spires and stately historic towers help make Moskva one of the most picturesque cities in Europe.

In the distance in the upper left-hand corner of the picture may be seen the Kremlin. This is an old, old fort occupying a hill 130 feet above the river. It is the center about which the city developed and is much venerated by the Russians. It is now the civic and religious center of the city. How does the location of the city help to explain its importance?

Problems to solve: first, that of getting the loyal support of the people and, second, that of winning the confidence of other nations. No one wants to do business with a people or nation whose credit is not good. So the foreign trade of Russia is as yet only a small part of what it was before the Revolution.

The government must also educate the people and teach them to help themselves. It needs to develop agriculture and industry and to improve transportation throughout the country.

Russia is a country vast in extent and with great natural resources waiting to be developed. In variety of climate, soil, and resources it is much like our own country. Some day, if Russia grows and prospers, it will be one of the great nations of the world.

147. THE LITTLE COUNTRIES OF THE BALTIC

THE LESSON FORECAST

1. The little Baltic countries and their origin.
2. What they produce for home use and for trade.
3. Reasons for the Free City of Danzig.
4. Leading cities of the region.
5. Problems of the little Baltic countries.

The resources and activities of the people. Lithuania, Latvia, and Estonia are three of the five new countries which before the World War belonged in whole or in part to the great empire of Russia. The other two countries, Poland and Finland, we have already studied.

Because of their good soil and favorable summer climate, these three countries are devoted largely to agriculture. The crops, like those of other countries in the northern portion of the Great Central Lowland of Europe, are grains, flax, hemp, and potatoes. Cattle are raised and dairying is increasing. Manufacturing is being developed, and the exports are chiefly farm and forest products. While these three countries are all lacking in minerals and water power, they have abundant forests which furnish much valuable timber.

The Free City of Danzig. The German city of Danzig, at the mouth of the Vistula, with a small territory around it was made a free state at the close of the World War. This was done largely to provide Poland with a seaport. Danzig is therefore the port which handles commerce with Poland, Russia, and Germany. It has thirty miles of

FIG. 380. **A street scene in Riga, Latvia.** Riga lies on the Dvina River about seven miles up from the Gulf of Riga, an inlet of the Baltic Sea (Fig. 367). Its harbor is usually frozen over for more than four months in the year. Can you explain why, in spite of this disadvantage, Riga is an important port?

Notice the arch over the horse. This douga, as it is called, is much used in Russia. Can you tell why Russian customs should be found in Latvia?

frontage on the Baltic. Danzig is under the protection of the League of Nations.

Chief cities of the little Baltic countries. The chief city of Lithuania is Kaunas (Kovno), an industrial center on the Niemen River. Riga, the principal city of Latvia, although situated on a river several miles from the Gulf of Riga, once was the second of the Baltic ports of Russia in importance (Fig. 380). It is still a leading port and a busy trade center, exporting local products. Tallinn (Revel), located on a small bay off the Gulf of Finland, is the capital and trade center of Estonia.

Problems of the people. Because they have neither minerals nor water power, it is not easy for these states to develop manufactures, even goods for home use. They must therefore produce products which they can sell to other countries in exchange for necessities. Most of their products for export come from the farms or the forests. Can they produce and market at a profit these products in markets that can buy the same things elsewhere? To make this possible, better and cheaper means of transportation must be found, for now these countries are handicapped in trade during the winter months when the harbors and rivers are frozen over.

Moreover, these small countries lie between Russia and the ocean. Russia needs ports that will give it access to the Atlantic Ocean and the great markets of distant nations. For this reason Russia may some day try to get back the lands it has lost. Can these small countries of the Baltic with such a powerful neighbor behind them maintain their independence, keep at peace, and grow in power?

SOME RELATED PROBLEMS

1. Why does Russia, although bordering on four seas, have so much difficulty in trading with foreign countries?
2. How do the occupations of the people of northern Russia suggest how a better use could be made of the land in northern North America?
3. How would an increase in the amount of manufacturing carried on help the people of Russia?
4. Why are the extremes of temperature so much greater in Russia than in England or Norway?
5. Why is the Polish corridor to Danzig not favored by the Germans?
6. Where are the great petroleum fields of Russia, and how does the oil reach the markets of the world?
7. Why are the inland waterways of Europe better developed than are those of our country?
8. Why is the Baltic not so good an outlet for Russia's trade in grain as is the Black Sea?

COUNTRIES OF THE GREATER HIGHLAND AND NEIGHBORING LOWLANDS

148. WHAT THE MAPS, TABLES, AND GRAPHS SHOW

Problems:

1. Is the Iberian Peninsula well situated for foreign trade? (*a*) What great water gateway lies on the south? (*b*) Where are the most productive portions of the area? (*c*) Show that the region is well situated for trade with the Mediterranean countries, Africa, and the Far East; with countries bordering the Atlantic Ocean.
2. What effect has the position of the Balkan Peninsula had upon the welfare of its people? (*a*) Why should we expect many people to pass through this section from Asia to Europe? (*b*) Show how the islands of the Aegean Sea helped the early seamen in their explorations. (*c*) How have the rugged surface and rich valleys tended to separate the people rather than to bring them together? (*d*) What great water route crosses the land route from the Balkans to Anatolia? (*e*) What large city has grown up at the crossing of these two routes?
3. Trace the route of the Berlin-to-Bagdad Railroad (Oriental Express) from Berlin to Istanbul. (*a*) Follow the route of this railroad through the following cities: Berlin, Dresden, Praha, Wien (Vienna), Sofiya (Sofia), Budapest, Beógrad, Istanbul. (*b*) What great river valley is followed from Germany into Czechoslovakia? from Wien to Beógrad? from Beógrad to Nis (Nish)? from Sofiya to Edirne (Adrianople)? (*c*) What great water route does this rail route cross at Istambul? (*d*) Why is this an important route? (*e*) How are Romania and Bulgaria handicapped in reaching the ocean?
4. What important routes lead into and out of the Mediterranean Sea? (*a*) What route leads to the Atlantic Ocean? to the Black Sea? to the Red Sea? (*b*) Find a canal route into southwestern France and a river route to Lyon and central France. (*c*) How may one travel north from Genova (Genoa)? (*d*) By what water route may the Po Valley be reached? (*e*) Find a railroad running east from Fiume. (*f*) How could one travel from the countries of the eastern Mediterranean into Mesopotamia?
5. Why are the Plains bordering the Po so valuable to Italy? (*a*) The graph of what city tells you of climatic conditions here? (*b*) Compare Madrid and Milano (Milan) in the Po Valley as to rainfall. (*c*) Compare Madrid and Seville as to rainfall and temperature; Roma and San Diego, Calif. (Figs. 225 and 381).

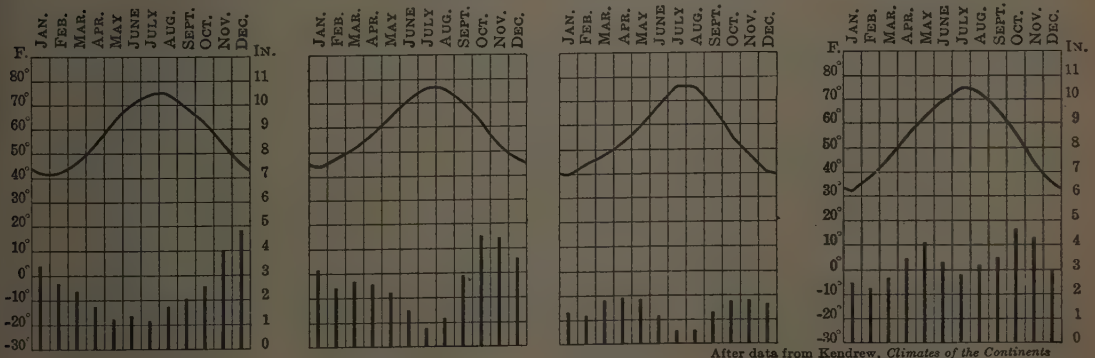

JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT. OCT. NOV. DEC.
F.
IN.
80° 70° 60° 50° 40° 30° 20° 10° 0° -10° -20° -30°
11 10 9 8 7 6 5 4 3 2 1 0
After data from Kendrew, *Climates of the Continents*
Istanbul, Turkey
Alt. 246 ft. Temp. 57.7°
Rainfall 28.8 in.
Roma, Italy
Alt. 164 ft. Temp. 59.7°
Rainfall 31.7 in.
Madrid, Spain
Alt. 2,149 ft. Temp. 55.9°
Rainfall 16.6 in.
Milano, Italy
Alt. 482 ft. Temp. 54.5°
Rainfall 39.7 in.

FIG. 381. **Average annual temperature and rainfall for four cities of southern Europe**

FIG. 382. **A pastoral scene in the Bernese Oberland.** This is one of the most beautiful scenic regions in all the Alpine country. It includes the area in Switzerland lying south of the city of Berne and east of Lake Geneva (Fig. 367). What large rivers have their headwaters in the Bernese Oberland? Try to find out what famous railway tunnels have been constructed in this region.

Can you explain why there are no trees found here? Could the pasture seen in this picture be used all the year round? Give the reason for your answer.

THE HIGHLAND COUNTRIES OF CENTRAL EUROPE

149. SWITZERLAND: A LAND OF LIBERTY

THE LESSON FORECAST

1. Why the Alps are a favorite resort area.
2. Contrasts between ancient and modern transportation through the Alps.
3. Why grazing is more extensive than farming.
4. Why the Swiss do not manufacture bulky goods.
5. The cities of Switzerland.
6. Problems of the Swiss people.

General features of surface and climate. Switzerland is a rugged country in the high Alps which separate northern from southern Europe. The mountains are well watered and receive a heavy snowfall each winter. The snows of many winters have formed great ice masses, or glaciers, which cover the highest mountains. These glaciers creep slowly down the river valleys until they melt in the warmer temperature and form swift mountain streams. The snow-capped peaks with their steep slopes, the great glaciers, and the green valleys with their beautiful, clear lakes have made the scenery of Switzerland famous the world over (Fig. 382).

Switzerland as a resort area. Switzerland, being easily reached from the cities of western Europe and by tourists from America, is much visited both in winter and in summer. In fact the occupation of many of the people is that of caring for tourists. In the summer months mountain climbing attracts many visitors. In the winter such sports as skating and skiing have made some towns winter resorts.

Travel and transportation. The Alpine Highland is not only a great climatic barrier between the warm, dry southern peninsulas and the colder northern countries but also a barrier to trade and travel. Roads have long been built over the low points or passes in the Swiss Alps, and for thousands of years these passes have served as routes for travelers and for armies. Tunnels have been built under certain passes, and one cut through the mountain wall is used by a number of railroads (Fig. 383). These tunnels have increased trade between northern and southern Europe and made it much less difficult for people to reach these regions.

How the people make a living. In this country of steep slopes the amount of farming land is small, agriculture is limited, and much of the food supply must be imported. Most of the people live in the northern

Swiss Federal Railroads

FIG. 383. **A famous railway in Switzerland.** This is a section of the St. Gotthard line, which crosses the Alps from Lucerne to Milano, Italy (Fig. 367). This railway, which is only about 175 miles long, passes through fifty-six tunnels and over many bridges and viaducts. Some of the tunnels are in spiral form. The longest, under the St. Gotthard Pass, is nine miles in length.

Study the picture. Can you tell from it what kind of power is used? It is easy to secure power in a mountainous country. Do you know why? What special risks would a railway such as this one need to guard against?

Swiss Federal Railroads

FIG. 384. **Haymaking in Switzerland.** This is a scene in the upper valley of the Inn (Fig. 367). The high valleys of Switzerland produce excellent grass for pasture and hay. What important industry does this account for? Would it be easy to farm these valleys? Study the picture. Notice how securely the man is fastening the load of hay to the wagon. Why is this necessary?

Spring comes late and the summer season is short at this height. Which can be produced in the shorter season, a crop of hay or a crop of wheat?

plateau region where there is excellent pasturage, and grazing is an important industry (Fig. 384). In many sections the cattle are driven to the high mountain pastures in summer and are brought to lower levels for the winter. As the market demand for milk is limited, dairy products that can be easily transported long distances are made. The cheese, the condensed milk, and especially the milk chocolate made in Switzerland are known the world over.

Switzerland lacks coal and iron, but it has many mountain streams that can be made to produce electric power. The Swiss are famous for their production of laces, watches, and clocks, and for their beautiful carving in wood. These are all products for which little raw material is used but which require the greatest skill and patience in making. Many of the articles are made entirely by hand. The people of Switzerland are continuing to make these products, which are exported widely.

Since Switzerland is an inland country, it can neither import nor export bulky goods easily. It is almost entirely dependent upon railroads for its commerce, and all goods must pass through other countries. But its

imports are far greater than its exports. If it were not for the income derived from caring for the great number of tourists who visit there, Switzerland would not be able to buy more than it sells.

This little mountain country, widely known as the "Playground of Europe," has long been famous for its independence and for its industries, but above all for the beauty of its scenery.

Swiss cities. Berne, the capital, because of its situation on a high bluff washed on three sides by the river Aar, in early days was easily defended. It is a city with no special industries but is much visited by tourists who are interested in the quaintness of its historic buildings and in the beauty of its surroundings.

Zurich, the largest city, lies on Lake Zurich, surrounded by beautiful scenery. Because of excellent connections by tunnels with Austria and Italy it is the leading commercial and industrial city. St. Gallen, celebrated for its fine laces, and Basle are also busy industrial cities.

Geneva, the watch-manufacturing center of the country, is located on the largest lake in Switzerland, and on a direct line of trade and travel between France and Italy. It is the home of the League of Nations and hence has become an important city politically.

Problems of the Swiss. During the World War, Switzerland was surrounded by warring countries, yet the government had to remain neutral and the people took no part in that great conflict. Because of its small size and because its population includes many Germans, French, and Italians, Switzerland for its own safety must remain at peace with its neighbors.

In the meantime greater numbers of visitors must be attracted throughout the year to its resorts, more of the water power must be developed, and the products for trade increased so that the country may prosper.

150. AUSTRIA: A REPUBLIC OF GERMAN-SPEAKING PEOPLE

THE LESSON FORECAST

1. The present area of Austria compared with its area before the World War.
2. Why it is handicapped in manufacturing and trade.
3. What agricultural activities are carried on.
4. How industrial activities may be increased.
5. How the importance of Wien is explained.
6. Problems the people are facing.

Austria today and yesterday. Austria, like Switzerland, is a mountainous country, with lower land to the north. The mountains of Austria are not, however, so high as those of Switzerland, and hence more of the land can be used for forests, agriculture (Fig. 385), or manufacturing. Before the World War, Austria was a part of the great empire of Austria-Hungary and one of the richest nations of Europe. Now Austria is only a small country devoted chiefly to agriculture and manufacturing. The area under forests is large and the country possesses much valuable timber. Although Austria lost much of its mineral wealth to its neighbors when it lost area, it is now developing its manufacturing interests rapidly. This is partly because of the abundant water power that furnishes electricity.

How the people make a living. Austria, with an area about equal to that of New England, excluding Maine, has a dense population, about one-third being engaged in agriculture (Fig. 386). The chief crops are grains, potatoes, and turnips. Dairying and the raising of horses, sheep, and swine are increasing rapidly, but it is necessary for Austria to import large quantities of food supplies each year.

The manufactures include agricultural machinery, automobiles, textiles, and fine leather, and are increasing rapidly. Textiles and leather are exported from Austria to neighboring countries.

Photo by Underwood & Underwood, New York

FIG. 385. **A scene in the Austrian Alps.** This picture was taken close to the Italian border in the part of western Austria known as the Tirol. Here cattle raising is the most important industry. Grain is raised also. What uses would be made of the grain? Why do you think cattle raising and dairying are so often important occupations in a mountainous country?

Do you know why the houses in the picture are grouped in the center of the valley? What danger would there be in living at the foot of the steep slopes?

What are the light patches on the peak in the background?

Where do you think the women and children in the picture are going? Do the bags on the cart look as if they had grain in them? Why should they be taking grain up the mountain side? What are the women carrying? Could a tractor be used for cultivating these slopes? Would it be easy to use machines for harvesting the crops? Give two reasons why the fields here must be small.

The Austrian capital. Wien, the capital, is still one of the largest cities in the world, although its population has decreased greatly since the World War. It is situated on the plain near the mountains, and on the Danube River, one of the great natural trade and travel routes of Europe. Its location is quite similar to that of Denver, except that Denver does not possess the advantage of being located on a great river as is Wien. Through the city, therefore, passes the trade between Germany, the plains of Hungary, and the other countries of eastern Europe. Wien is one of the most famous old cities of the continent of Europe, full of historic places that are of great interest to visitors.

Problems of the people. The present area of Austria is extremely small compared with what it once was. What is even more important is the fact that the country with its loss of area has lost so many of its natural resources and opportunities for trade that it cannot develop many lines of industry. Countries cannot grow and prosper if for employment their inhabitants are forced to depend mostly upon only a few kinds of work. There should be a variety of industries so that all the people may have a chance to engage in the different occupations for which they are best fitted.

Austria faces the problem of developing its few resources so that it can have surplus products to sell and be able to pay off its debt to other nations. Unless it can do these things, it will be difficult to keep the people contented and make the government strong.

Ewing Galloway

FIG. 386. **A farm landscape in northwestern Austria, near Salzburg** (Fig. 367). Find out in what mountain system this valley lies. Cattle raising, dairying, and lumbering are the chief occupations in this region. In what part of the valley would you expect to find the dairy farms? Study the picture. Where are the forests? Do you think the land now forested could be farmed if the trees were cut away? Would it be wise to plant young trees as the old ones are cut down?

SOME RELATED PROBLEMS

1. Why are the Swiss especially interested in forestry? Is there much level farming land in Switzerland?
2. Why do the Swiss specialize in the manufacture of watches and jewelry rather than in the manufacture of farm machinery and locomotives?
3. What are the advantages in building railway tunnels through the Alps rather than in building roads over the passes?

THE PLAINS OF THE DANUBE

151. HUNGARY: A EUROPEAN CORN COUNTRY

THE LESSON FORECAST

1. How the World War changed Hungary.
2. Surface of the land and the climate.
3. Why Hungary may be compared with certain areas in our country.
4. The importance of mining and of manufacturing.
5. Reasons for the location and growth of Budapest.
6. Problems faced by the Hungarian people.

Effects of the World War upon Hungary. Before the World War, Hungary was a part of the great empire of Austria-Hungary and extended beyond the Carpathians. Today it is an independent country. Hungary is now about the size of Indiana, having lost territory to Romania and to the new country of Yugoslavia. Although the plain upon which Hungary lies is entirely surrounded by mountains, its territory does not now extend to them on any side.

How the land is used. The present area of Hungary is mostly a plain. The climate in summer is hot, with frequent rains, an ideal climate for growing corn. Conditions here are very similar to those found in the great corn state of Iowa. Corn, therefore, is grown very extensively on the fertile soils of the Danube plain. More than half of the people are farmers. Besides corn, wheat, potatoes, and sugar beets are produced in great quantities. Hungary's exports include some wheat and flour. In this grain-producing country large numbers of swine, sheep, and cattle are raised.

Many of the large estates which once included great areas of farming land, have been broken up into small farms. And now that the people own their own land instead of working for others, they are encouraged to improve their methods of farming.

Mining and manufacturing activities. Each year Hungary mines about the same quantity of coal as does Iowa. This coal furnishes power for the beet-sugar and flour mills and for the textile factories, which are increasing in number. But Hungary is just making a start in manufacturing, and so most of its manufactured necessities must be imported.

The capital and the problems of the people. There are but three cities in Hungary with a population over 100,000. Budapest with nearly a million inhabitants is the capital and chief city. Favorably located upon the Danube for trade and entered by railways from every direction over the Hungarian Plain, this city is naturally the largest trade and manufacturing center. Debreczen and Szeged, the two cities next in size to Budapest, are both much smaller.

Hungary, like other countries whose boundaries were changed after the World War, faces the problem of building a strong government. It must also provide its people an opportunity to make a good living. As the country increases its exports, it can secure more of the things needed at home. Improving farming and increasing manufacturing are therefore its greatest problems. As production increases, the people will be better satisfied with the new government. And as the government becomes stronger, Hungary will win the confidence of other countries with which it must do business. This is of importance because the countries of southeastern Europe have long been unfriendly toward each other and can become stronger only if peace is maintained.

152. ROMANIA: A CEREAL-PRODUCING COUNTRY

THE LESSON FORECAST

1. Romania's location compared with that of Hungary.
2. Why Romania is a great cereal-producing country.
3. The production and refining of petroleum.
4. Reasons for the importance of Bucuresti.
5. Problems of the Romanian people.

The country and its agriculture. Romania, occupying the plain of the lower Danube and bordering the Black Sea, has a much more favorable location than Hungary. Because of its rich soil and good climate, Romania, like Hungary, is a great grain-producing region. It raises especially wheat and maize or Indian corn and is the largest corn-exporting country of Europe.

Romania includes within its borders a part of the high and broad Carpathian Mountains, and thus its surface is varied. In these higher areas the land is devoted to grazing or is covered with pine forests. Swine and cattle are raised in large numbers, and lumber from this region is one of the main products of the country.

What Romania sells and buys. Romania is fortunate in having great supplies of petroleum. Oil and oil products are among the most important exports of the lower Danube ports.

Manufacturing, especially that of refined oils, lumber, and flour, is increasing slightly, but the country must import most of its textiles, machinery, and other needed supplies.

Cities of Romania. Bucureşti (Bucharest), the capital and chief railroad and commercial center, is well located on the plain with rail connections in all directions. Its population of over one-third of a million is several times greater than that of any other Romanian city. The other cities, scattered throughout the plain, both east and west of the mountains, are mainly local trade centers.

Problems of the people. The Romania of today contains many thousands of people who formerly belonged to other countries. In order that Romania may become a strong nation, these people must become loyal to their new country. This can be accomplished if they are well treated and given opportunities to make a good living.

Romania is not a rich country, yet it has vast resources, and if money can be secured manufacturing can easily be developed and other industries extended. Few people, however, will invest money in a country where the government is not strong and where the people are restless and discontented.

SOME RELATED PROBLEMS

1. As one studies the map of central Europe, in what way do the boundaries of Hungary and Romania appear undesirable?
2. Why were Germany and Austria anxious to control Romania during the World War?
3. Why has Romania often been overrun by warring peoples?
4. By what sea route does Romania reach the markets of the world? What two water gateways may menace Romanian trade?
5. What is the origin of the rich soils of the Hungarian Plain?

THE COUNTRIES OF THE BALKAN HIGHLANDS AND VALLEYS

153. WHY THE BALKANS HAVE BEEN A TROUBLE-MAKING REGION

THE LESSON FORECAST

1. The countries included in this intercontinental gateway.
2. Why this has been a region of many battles.
3. How the mountains have kept the peoples divided.
4. Why the strong nations did not want a united Balkan people.
5. What has been done to promote friendly feeling among these peoples.

A great intercontinental gateway. The Balkan Peninsula is separated from the peninsula of Asia Minor or Anatolia by the Bosporus, the Sea of Marmora, and the Dardanelles. From the earliest days of trade between Europe and eastern and southern Asia this natural land route has been a highway for commerce. Through it have passed many great armies all engaged in a struggle to secure land in this region. Frequently the struggle has been between people of the drier lands of Asia and those of the more favored regions of Europe.

The influence of the stronger nations of Europe. The Balkan Peninsula has always been a warring region, partly because this mountainous area has been divided among several small nations, each eager to grow in size and importance. Sometimes wars have been encouraged by the larger nations of Europe in order to prevent the forming of a big and united nation in the Balkans. Such a nation possessing so important a trade route might make laws that would aid its own people and at the same time hinder the trade of larger nations.

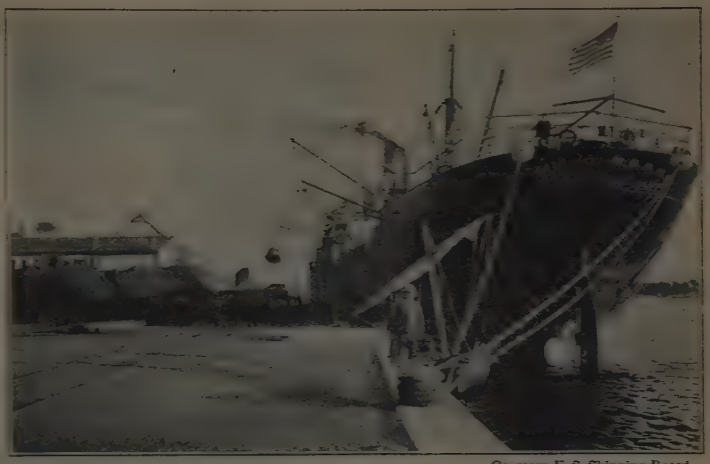
An attempt to pacify the people of the region. The Balkan people have a reputation for fighting quickly and hard. After the World War new boundary lines were made and one new country, Yugoslavia, was formed by uniting two countries with a part of the Austrian Empire. This was done in the hope of promoting peaceful feelings between these peoples, but the danger of future wars has not yet been removed.

154. YUGOSLAVIA: THE SERB, CROAT, AND SLOVENE KINGDOM

THE LESSON FORECAST

1. How the country was formed.
2. What the people produce for home use and for trade.
3. The backward condition of manufacturing industries and mining.
4. Reasons for the location and importance of Beógrad.
5. The problems of the people.

The land and the people. Yugoslavia was formed by combining the old countries of Serbia and Montenegro with a part of the empire of Austria-Hungary. The highland of the Dinaric Alps separates the fertile plain of the Danube from the coastal area where are the few ports of the country. Owing to the mountain barrier, much of the trade of the northern, richer section is carried along the Danube, or through the port of Fiume. The people speak a number of different languages, as the long name for the kingdom suggests. But these languages are all somewhat similar and are related to



Courtesy U. S. Shipping Board

Fig. 387. A view in the port of Sebenico, Yugoslavia. This port is on the Adriatic Sea, about halfway between Zara and Split (Fig. 367). Study the picture. What nation's flag is this boat flying? What is the name of the boat? Name its home port.

The cargo which is being loaded on the boat is bauxite. Look up bauxite in the dictionary. Of what metal is it the ore? For what is bauxite used?

How is the ore brought to the wharf? Do you think this port can handle a large quantity of goods?

the Russian language. Hence the people are called Slavs, as are the Russians.

How the people make a living. The kingdom has almost the same area as that of Illinois and Ohio combined and contains about the same number of people, most of whom are engaged in farming. About one-half of the land can be used for farming while the rest is almost equally divided between forests and pasture. We would expect, therefore, farming, cattle raising, and lumbering to be the chief industries, as they are. Lumber is the leading export of the country, followed by wheat, cattle, and other farm products.

Mining, except that of coal, has not been developed, although some copper and iron are mined. The country is rich in chemicals and oil deposits. Foreign trade (Fig. 387) is increasing rapidly and the chief industries of the country are prospering.

Cities and problems of the people. The cities of Yugoslavia are all small, Beógrad, the capital, being the largest because of its good location on the Danube.

The problems the country faces in no way differ from those of other Balkan countries. Because the Adriatic Sea and the Danube River afford good opportunities for trade. Yugoslavia should develop rapidly.

155. GREECE: A SMALL BUT INTERESTING COUNTRY

THE LESSON FORECAST

1. Why Greece was early a great trading center.
2. The culture of the ancient Greeks.
3. Nature of the land and the climate.
4. How the people make a living.
5. Why Athens is a famous city.
6. Some of the problems Greece is facing.

The importance of ancient Greece. Greece is a small country no larger than the state of Arkansas, but at one time it was the leading nation of the world. Because of its location and its excellent harbors Greece early became a great trading nation. Greek colonies were found scattered throughout the eastern Mediterranean and far into Asia. At one time the Greeks were far ahead of the people of any other country in art, literature, and education. Today many people visit Greece to see the ruins of its ancient buildings and to visit places of great historic interest.

How the people use the land. Greece is a mountainous country with dry, warm summers. It has little good farming land, but there are great areas of good pasture, and millions of sheep and goats (Fig. 388) are raised. Its crops are mostly cereals, wheat

FIG. 388. A shepherd's summer home in Greece. In winter these shepherds live in valleys in the lowlands. In summer they drive their flocks far up into the highlands to graze. Find out why they do not build permanent homes in the highlands and live there the year round. Why is so much land used for pasture in Greece? Could this land be cultivated? There are some farms growing grain and fruit in this mountainous country. Where would you expect to find them?

Study the picture. Of what material is this temporary shelter built? Why is this material used? Where do you think the cooking is done?

being the largest crop, and fruits, including currant-grapes and olives. Because of the similar climates its fruits are much like those of California. Olives are made into oil, and this and the dried currants are among the chief exports.

Cities and problems of the Greeks. The largest city, Athenai (Athens), was one of the most famous of ancient European cities. It is the capital and of chief interest to visitors. The second city in size is Thessalonike (Salonika), a railroad center in the north.

Greece has in recent years been engaged in a number of wars. Its government has changed in form frequently, and the people are constantly being stirred by revolutions. Greece therefore faces the great problem of securing a good government before it can develop its resources and commerce. It is at present a republic.

156. BULGARIA: A COUNTRY OF MANY CONTRASTS

THE LESSON FORECAST

1. The nature of the land surface.
2. What the people produce for home use and for trade.
3. The location and importance of Sofiyä.
4. The problems of the people.

The country and the activities of the people. Bulgaria is a small, mountainous country about the size of Ohio. On the north it borders the Danube in a wide plain. Other smaller river valleys running east and west also furnish fairly good farming land. Like its neighbors in the Balkans, Bulgaria is primarily an agricultural country. The leading crop by far is tobacco, but grains, especially wheat and barley, are raised in large quantities. Goats and sheep thrive in the pasture regions, their skins forming an important article of export to this country. One of the products for which Bulgaria is widely known is attar of roses, made from rose petals.

Although the country has rich resources in its abundant coal, iron, and copper deposits, mining as yet is but slightly developed. There is very little manufacturing, and the country must therefore import a large part of the clothing, machinery, and other articles that are needed.

Cities and problems of the Bulgarian people. The only city of note in Bulgaria is the capital, Sofiya, located at the junction of three railroads, one of which connects it with western Europe. It is naturally the trade center of the country.

Bulgaria has long been the one Balkan nation ambitious to become great in size and power. The Bulgarians have been engaged in many wars. During the World War they joined the Germans and Austrians. As a result they incurred enormous debts. The country, therefore, with little money to spend in developing its industries, faces the problem of keeping out of future expensive wars and of paying its debts. It is, however, making a good start, and if it can develop its agriculture to a greater extent it will have more goods to export and therefore more money for improvements at home.

157. ALBANIA: A MOUNTAIN COUNTRY

THE LESSON FORECAST

1. The size and surface of Albania.
2. The disadvantages with which the country must contend.
3. Why Albania has but little trade.

The country and the activities of the Albanians. Albania is the smallest and most mountainous country of the Balkans. It is under the disadvantage of having no railroads, although one to join Durres (Durazzo) and Tirana, the capital, is now under construction. There are few highways, no banks, and poor schools. The people therefore have little chance to improve their condition.

Some grazing and agriculture are carried on, but few of the products are exported. The only manufactures are those connected with agriculture, such as flour milling, olive pressing, and cheese making. All trade is carried on with Italy in Italian shipping lines. Shkodra (Scutari) is the trade center and Durres the chief port.

158. THE REPUBLIC OF TURKEY

THE LESSON FORECAST

1. How Turkey in Europe has varied in extent.
2. How the gateway between the Black and Aegean seas is controlled.

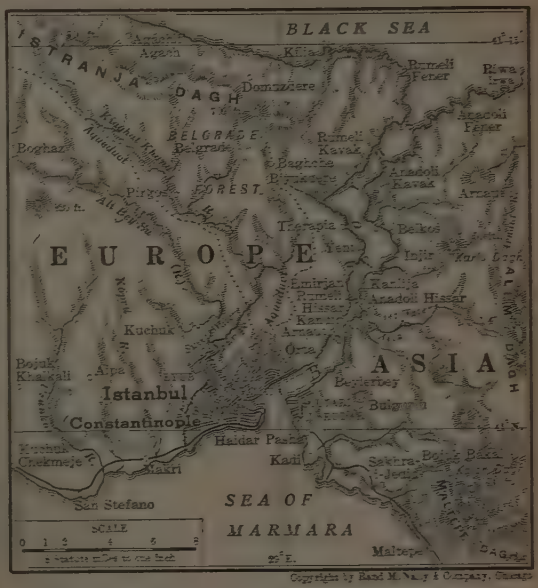


Fig. 389. **Shores of the Bosporus.** Why is Istanbul called a crossroads city? Many nations have wished to control it, but it has seldom been captured. Study the map. Explain why it is easy to defend the city. Guess the meaning of the Turkish word dagh. Then look it up in the dictionary.

3. Why this gateway should be free to all nations.
4. Why the city of Istanbul has so long been important.
5. Why people from many nations may be seen in Istanbul.

Turkey, past and present. Turkey in Europe is a small country only about one-fourth the size of Pennsylvania. It is a part of the Republic of Turkey which occupies the peninsula of Asia Minor, or Anatolia, across the straits from Europe. Turkey in Europe was once a great country that occupied all the Balkan Peninsula and extended to the northwest as far as Wien. It controlled this great highway between Europe and Asia and would still control it if the straits and the small sea lying between the Black Sea and the Aegean Sea were not kept open, even in time of war, by international agreement. Turkey now does not interfere with the commerce of other nations wanting to use this great waterway (Fig. 389).

Istanbul, Turkey, a great crossroads city. Istanbul, lying at the crossing of important land and water routes, was the capital of the old Turkish Empire and the center of the Mohammedan religion. Today Istanbul is, as in the past, one of the great cities of the continent of Europe. People of many nations meet in this interesting old city located so beautifully on an inlet of the Bosporus known as the Golden Horn (Fig. 389).

The small trade of Istanbul depends largely upon articles that come from Asia.

SOME RELATED PROBLEMS

1. How do you account for the number of islands in the Aegean Sea?
2. Why is it easier to enter the Balkan Peninsula from the south or the east than from the west?
3. Why are there many races speaking different languages in the Balkan region?
4. Why were the ancient Greeks a seafaring people?
5. In what way is Greece better situated to carry on world trade than is Bulgaria?
6. What conditions have made the Bulgarians farmers rather than sailors?
7. Why is Albania a backward country?
8. How would an increase in manufacturing help the Balkan countries?

THE IBERIAN PENINSULA: PORTUGAL AND SPAIN

159. PHYSICAL CONDITIONS AND OCCUPATIONS

THE LESSON FORECAST

1. The location, area, and population of the peninsula.
2. How the climate of the peninsula compares with that of northern Africa.
3. What areas in our country have a similar surface and climate.
4. The crops and animals that are important.

The location and surface of the peninsula. The Iberian Peninsula has an area a little larger than that of Nebraska, Kansas, and Oklahoma combined, but the two countries, Spain and Portugal, contain nearly six times as many inhabitants.

The peninsula is separated from the rest of the continent by the Pyrenees Mountains. These ranges form a barrier to trade and travel with other countries of Europe, and give the peninsula a climate more like that of northern Africa than of Europe. It is sometimes said that Africa extends to the Pyrenees. Not only is this true as to climate, but the ways in which the people live, the way they dress, and the architecture of their buildings are in many ways similar to what would be seen in northern Africa. Almost all of the country is a plateau across which a number of streams flow east or west in valleys which are largely devoted to agriculture.

What the peninsula produces. Most of the higher land is very dry, much like that of our Great Plains, and here are found large numbers of sheep and goats. The richest and most populous areas are in the lowlands along the coast and in the larger river valleys. From this region, where the cork oak is a native of the forests, comes most of our supply of cork. Wheat is raised extensively, although much of the farming depends upon irrigation. The chief crops of Spain and Portugal (Fig. 390) are grapes raised mostly for wine, oranges, and olives from which is obtained olive oil. These crops are the same as those of southern California which has a similar climate.

160. PORTUGAL: THE HOME OF EARLY DISCOVERERS

THE LESSON FORECAST

1. Exploits of Portuguese mariners.
2. Portuguese possessions now and formerly.
3. Reasons for the present interest of the Portuguese in Brazil.
4. How the people make a living.
5. The cities of Portugal.

FIG. 390. **A scene on the Douro River, Portugal.** Find the Douro on the map (Fig. 315). What is the name of the seaport at the mouth of the river?

The boat seen in the picture is carrying a cargo of port wine in casks. The wine is made from grapes produced in this region. Where do you think this wine got its name? Oporto exports much wine to European countries and to South America.

What is the purpose of the long oar to be seen at the stern of the boat? Find out whether a boat rigged as this one is can sail against the wind.

The importance of Portugal yesterday and today. Portugal faces the Atlantic and has long been known for its adventurous and seafaring people. Portuguese explorers discovered many new lands in both the Eastern and Western hemispheres. But Portugal today has only a few islands and a few small areas in Asia, and no important possessions except in Africa. Once the great country of Brazil belonged to Portugal, and Portuguese is still the national language there. Since people like to trade with those using the same language, Portuguese trade with Brazil is still large.

The activities of the people. In the lower parts of the large river valleys, which have their beginning in Spain, great quantities of grapes and olives are grown. Wine is the principal export of Portugal. The mineral wealth is not developed, and except for textiles there is very little manufacturing. Portugal is obliged, therefore, to import its machinery and its coal. Even some of its wheat is imported, although much wheat is grown at home.

Cities of Portugal. Lisboa (Lisbon) (Fig. 392) and Oporto, both ports, are the chief cities of Portugal. Because of their favorable location on the Atlantic they trade largely with Africa and the Americas. Oporto is a thriving industrial city as well as a commercial city.

161. SPAIN: A COUNTRY RICH IN POSSIBILITIES

THE LESSON FORECAST

1. Why Spain is a very rich country.
2. Why manufacturing is being developed.
3. Why Madrid is an important city.
4. Reasons for the importance of Barcelona and Valencia.
5. Problems facing the people of Spain and Portugal.

The rich resources of Spain. Spain is one of the richest countries of Europe in mineral resources. It mines and exports iron, copper, and a number of other minerals. With coal and iron available, Spain has naturally developed manufacturing, especially of textiles and steel. For its mills it imports cotton and machinery. Besides minerals, Spain exports wine, olive oil, oranges, and cork. Spain outranks all other countries in the quantities of oranges exported.

The former greatness of Spain. Once Spain had large possessions in other continents. The Spanish explored southern North America and South America where the

Fig. 392. **The Central Plaza, Lisboa.** Lisboa is the Portuguese name of the city. What name is often used in English? (Fig. 315.) What is the political importance of Lisboa? On what river is Lisboa? It is a seaport, and can be reached by the largest ocean-going ships.

Open squares or plazas such as the one in the picture are found in all Spanish and Portuguese cities. What has been done to beautify this plaza? Do you see anything in the picture that spoils some of the beauty of the view?

Why do the buildings in the background seem so much higher than those around the plaza? Might such high, steep hills be inconvenient in a city? Would they be of any benefit?

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Fig. 391. **Municipal plaza in the old section of Madrid.** Contrast this public square with the one in Fig. 333. Note the difference in the buildings. Find Madrid on your map (Fig. 315). Can you see any advantage in its location? Does the location of Madrid help to explain its average annual temperature and rainfall? Consult Fig. 381.

Spanish language is still spoken largely. They also explored the Antilles and the Philippines. But Spain gradually lost its foreign possessions and now owns only the near-by Balearic and Canary islands and a few small areas on the coast of Africa. This great nation, once rich and powerful, has become one of the lesser commercial nations of Europe, dependent mostly upon its own products.

Leading cities of the country. Madrid, the largest city of Spain, lies on an arid plateau. Its size is due largely to the fact that it is the capital, the home of the king, and the seat of the government. Because of its central position it has become a railroad and manufacturing center. But because of the arrangement of the river valley and the steep slopes, railroads must follow roundabout routes either from Portugal, from France, or from the coastal cities of Spain.

Barcelona and Valencia, both Mediterranean ports, are leading commercial cities. Barcelona has an advantageous position because of its nearness to France and because it is on the best railway route to that country. It manufactures textiles and paper and is the leading industrial city of the country. Valencia lies in a region devoted to the raising of fruits. Its exports include great quantities of oranges.

Problems of the Spanish and Portuguese. In recent years there have been revolutions in Portugal, and the unsettled conditions have, to a certain extent, interfered with its development. As both countries are naturally agricultural, their greatest problem is that of

increasing their crops. This means increasing the amount of irrigated land and improving the means of irrigation.

Manufacturing needs to be encouraged in order to supply products for home needs and to increase the kinds of products that can be exchanged with other countries.

THE ITALIAN PENINSULA

162. ITALY: THE MIDDLE MEDITERRANEAN COUNTRY

THE LESSON FORECAST

1. The favorable location of the country.
2. The surface and climate of the country.
3. Why Italy is an agricultural country.
4. Italy's disadvantages in manufacturing.
5. The reasons for emigration.
6. The former greatness of the Roman Empire.
7. Why Italy attracts tourists.
8. Why Roma is a famous city.
9. Other interesting cities of Italy.
10. The location and importance of Fiume.
11. Some problems the people are meeting.

The central position of the country. Italy is a long, narrow peninsula with an extensive coast line but with only a few good harbors deep enough to accommodate modern ships. When trade between Europe and Asia was carried on mostly by way of the Mediterranean or by caravan, Venezia (Venice) was one of the world's great commercial cities. Today Napoli is the chief Italian port. It is easily reached by vessels from the west by way of the Strait of Gibraltar and from the east by way of the Suez Canal.

The surface and climate of Italy. Italy is a mountainous region with the Apennines forming the backbone of the country. On the north the Alps (Fig. 393) protect Italy from the cold winds of northern Europe. In summer the lower sections of Italy are hot and dry like other countries bordering the Mediterranean. Even in winter it is never cold, except in the higher or more northern portions. The richest part of Italy is in the valley of the Po, which is bordered by a broad alluvial plain with excellent soil.

How the people make a living. Italy, like France, is an agricultural country with many small farms. Because of its dry climate much wheat is raised. It also raises corn, which is an important article of food. But the products for which Italy is best known are olives, grapes for making wine, and raw silk, in the production of which Italy ranks next to China and Japan. The irrigated areas of northern Italy furnish rich pastures for dairy cattle. Italy is famous for its cheese. It is also widely known for its marble, and sulphur has long been produced. Iron ore of excellent quality is mined.

In spite of the fact that Italy has little coal, manufactures, especially of silk, cotton, and woolen textiles, are increasing rapidly. Power is secured from the mountain streams, which can furnish many times the amount of electricity now in use.

The exports are largely textiles, raw silk, cereals, and flour. Coal, machinery, wool, cotton, and other raw materials are imported.

Italy is so densely populated that it has to import some of its food. Because of the increase in manufactures as well as in agriculture, Italy is ranking higher as a commercial nation. For years Italians emigrated in large numbers to both South America and North America. The government has been endeavoring to restrict the number of emigrants. This means more people trying to make a living at home, and more people to aid in developing Italy.

When the Romans led the world. The Romans were long the most important people of Europe. The great Roman Empire controlled the commerce of the world, and in those days Roma was the chief city. It was famous for its beautiful buildings.

Today most of the works of the older Romans are in ruins, but many of the roads and aqueducts constructed by the Romans

FIG. 305. **A scene in the Italian Alps.** Notice in the background of the picture light pathways reaching down the slopes. What are they? Is this a view high in the mountains? How can you tell? Do the mountains show the effects of the weathering? Would you expect to find many streams among the mountains? Explain. Of what value are the streams to the farmers on the plain below? What great river do these streams feed? Study the mouth of this river on the map (Fig. 367). Where do you think the material to build the delta has come from?

Judging from the picture, what industry is carried on here? Why are stock raising and dairying the most common occupations in a mountainous country? Is it possible to market fresh milk daily from a dairy farm among the mountains? What dairy products need not be marketed at once?

Do you think the hay the man has on his cart is cultivated, or is it wild grass? Should you expect to find in this region a long season in which the cattle must be kept on dry feed? Why?

may still be seen. The beauty of the ruins and the historic places in Italy still attract many thousands of visitors each year.

The principal cities of Italy. Roma is the capital of Italy, as it was of the great Roman Empire. It is a beautiful city, famous for its stately buildings and for its ruins. St. Peter's is one of the finest churches in the world. Near it, surrounded by famous gardens, is the Vatican, the palace of the Pope.

Napoli, the chief port, because of its excellent harbor and the richness of the surrounding region, is beautifully situated on the blue waters of the Bay of Naples (Fig. 394). Near by is Vesuvius, the most famous volcano in the world. The ancient cities of Herculaneum and Pompeii, buried in the first recorded eruption of Vesuvius, are being uncovered, and from their ruins we can learn how the early Romans lived.

Milano, in the valley of the Po, is the largest city and the chief railway center because it has easy communication with central Europe through tunnels under the Alpine passes. It is a manufacturing city especially noted for its silks and cottons and its cutlery. Here is the beautiful and world-famous Cathedral of Milano.

Near by are Torino (Turin), a manufacturing and trade center, and Venezia, once a great port. Venezia, built on a number of islands, is best known for its beautiful buildings and because its streets are canals and travel is by water.

Genova, which is famous as the birthplace of Columbus, is at the eastern end of the

FIG. 394. **A general view of Napoli and the bay.** Napoli is said to have the most beautiful location of any city in the world. Have you learned anything about the color of the water in the Mediterranean? Give the name of the mountain in the background. There is a deep hollow at the summit. Why? Try to find out if this mountain has always looked as it does now. Why is Napoli an important commercial city? Can you give any reasons why a great city should have grown up here?

Italian Riviera. It lies at the head of a bay and has railroad connections with central Europe and the Po Valley. It naturally handles the trade of northern Italy.

The city of Fiume. The city of Fiume, lying on the boundary between Yugoslavia and Italy, belongs to Italy. It has an excellent harbor and through it passes most of the commerce from Yugoslavia. Although about one half of the people are Italian, the surrounding country is entirely Slavic.

Problems of the people. Italy is an old, old country and its soils are worn and have become less fertile. Its forests have been cut away and much of its land does not produce good crops. Its problems, therefore, are to build up agriculture in order to raise more food for its people, and also to increase manufacturing and trade. Only by doing these things can the people make a better living and grow more contented. If conditions are improved at home, emigration will decrease and Italy will grow stronger as a nation. Most Italians long to see their country regain some of its former greatness.

SOME RELATED PROBLEMS

1. Why is the location of the Iberian Peninsula favorable for trade? Why is the route from Europe to Asia by way of Istanbul more important than that from Europe to Africa by way of the Strait of Gibraltar?
2. Why is the interior of Spain thinly populated?
3. Why do the English wish to hold the Strait of Gibraltar? Why did Spain lose almost all her former outlying possessions?
4. Why was Italy well located to become the center of commerce and culture in ancient times? By what routes does Italy carry on commerce with other European countries?
5. Why have many Italians emigrated to foreign lands?
6. Make a list of the ancient ruins in Italy you would like to visit.

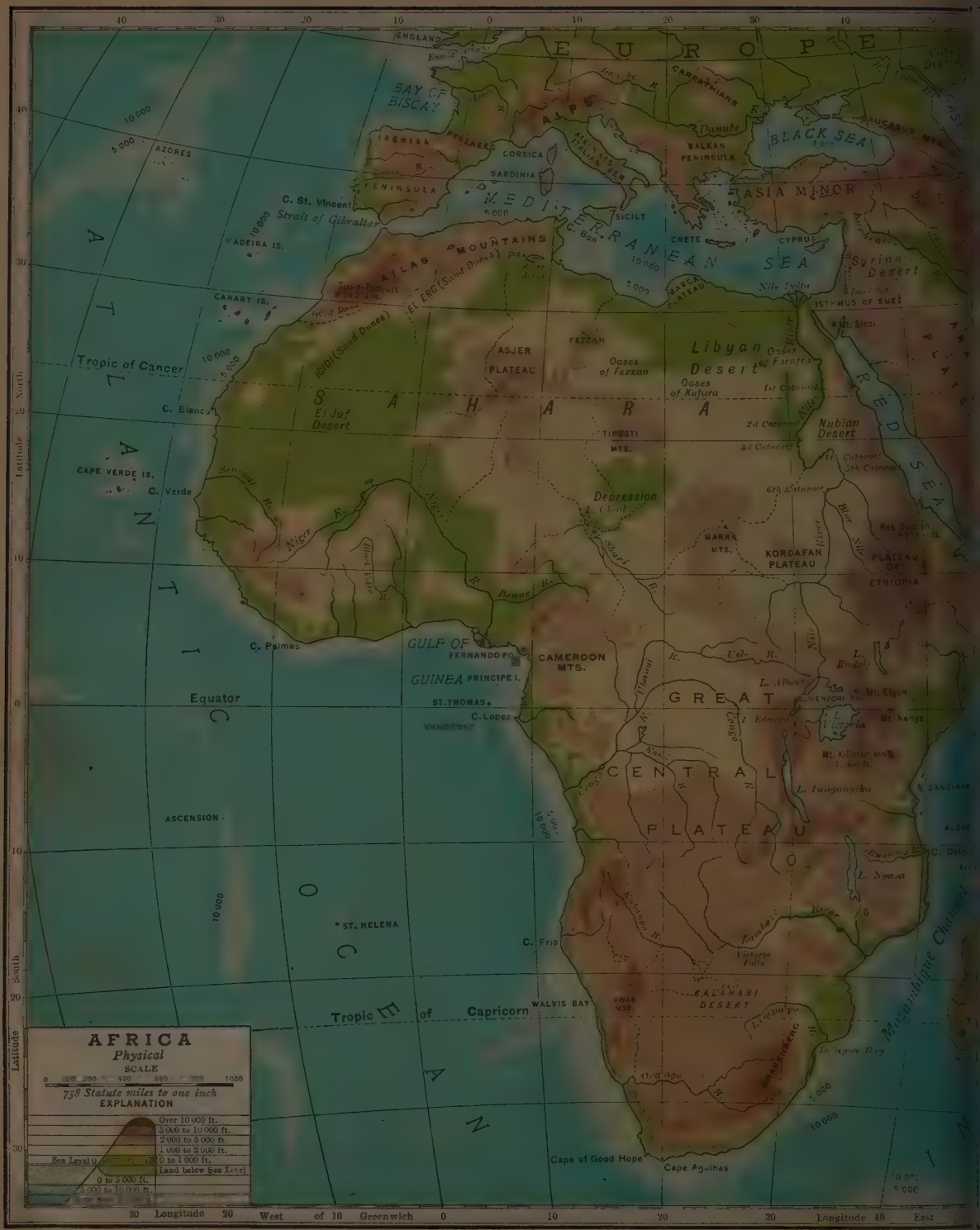
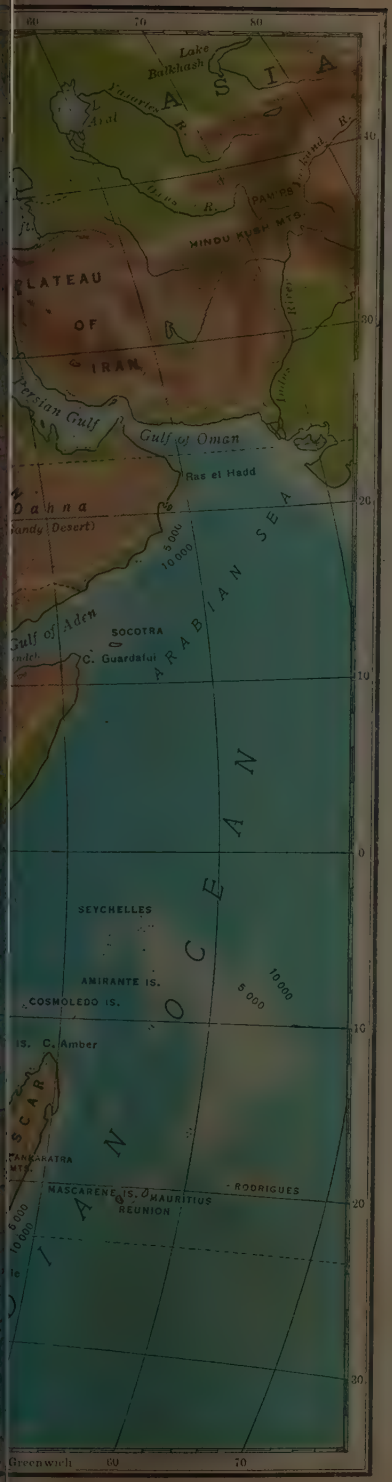


FIG. 395. **A Physical Map of Africa**



AFRICA

163. WHAT THE MAPS, TABLES, AND GRAPHS SHOW

Problems:

1. Why is the population of Africa unevenly distributed? (*a*) Find two large regions that are thinly populated (Fig. 402). How does the rainfall map help to explain the sparse population? (*b*) Locate an area with more than 125 people per square mile. Does the rainfall map help to explain why the population should be so dense in this place? (Fig. 401.) (*c*) In Central Africa why are the regions with the densest population found along the rivers? (*d*) Explain the three well-populated areas found in Northeast Africa and in South Africa.
2. Why does the Nile River have fewer tributaries than the Congo? (*a*) From what sources does the Nile get most of its water? (Fig. 395.) (*b*) Why does the Nile have few tributaries north of 10° north latitude? (*c*) What explanation does the rainfall map (Fig. 401) offer regarding the distribution of rainfall throughout the Congo Basin?
3. Although the climates of North Africa and South Africa are much alike, the southern part of the continent has been developed only recently, whereas the northern part has been known and occupied thousands of years. What is the explanation of the early settlement of North Africa? (*a*) Why has it always been easy to reach North Africa from Europe and Asia? (*b*) Why was South Africa not reached by way of the sea before the voyages of Dias and Vasco da Gama? (*c*) Why is it difficult even today to reach South Africa from the northern part of the continent? (*d*) Will air travel make South Africa more accessible?
4. Why is the northern coast of the Mediterranean a better region for trade than the southern coast? (*a*) Show why the north coast of the Mediterranean has more favorable land lying back of it than has the south coast. (*b*) Why is it impossible for the Sahara ever to become a region important to man?
5. Where are the great forested regions of Africa found? (Figs. 400 and 496.) Why are they valuable? (*a*) Where are the grasslands located? (*b*) Show why the tropical grasslands are not as useful to man as the grasslands in the southern part of the continent.
6. Why have European nations been so anxious to acquire territory in Africa? (*a*) Show how Africa is divided among the nations of Europe (Fig. 399). (*b*) What are the disadvantages in having so many divisions? (*c*) Do you think that without any assistance the peoples of Africa could develop their own resources? (*d*) What parts of the continent do you think should prove most profitable to the nations holding them? Explain why.

THE SLOW DEVELOPMENT OF AFRICA

164. EUROPEAN INTEREST IN AFRICA

THE LESSON FORECAST

1. How Africa compares in size with the other continents.
2. Why North Africa has been long known.
3. The first voyages around the Cape of Good Hope.
4. Why explorers found it difficult to reach the interior of Africa.
5. Why the surface and the rivers are barriers to the interior.
6. Why climate in tropical Africa is a barrier to settlement.
7. The effect of disease and savage tribes on European settlement of this region.

Reasons for the long delay in the development of Africa. Africa, the largest continent in the world with the exception of Asia, lies just across the Mediterranean from a number of the countries of Europe. Because of its location, North Africa has been known to the people of Europe for a long, long time. Even in the days of the ancient Greeks and Romans an extensive trade was carried on with the peoples of North Africa. The remainder of the continent, however, long remained almost entirely unknown.

A few years before Columbus discovered America, Dias, a Portuguese explorer, sailed around the southern end of Africa. In 1497 Vasco da Gama, another Portuguese explorer, made the voyage to India and back around the Cape of Good Hope. But the only result of Da Gama's voyage and the voyages of many other explorers was the slight knowledge gained of bits of the coast near the few good harbors at which vessels could land on the almost unbroken coast of this continent (Fig. 395).

The interior of Africa is not easily reached from any direction. At the north the great desert region, the Sahara, long kept people from going far inland except by way of the Nile Valley. It was almost as difficult to reach the interior from other directions, for most of Africa is a high plateau, the steep sides of which rise not far from the ocean. Because the rivers, which form natural travel routes in any country, are

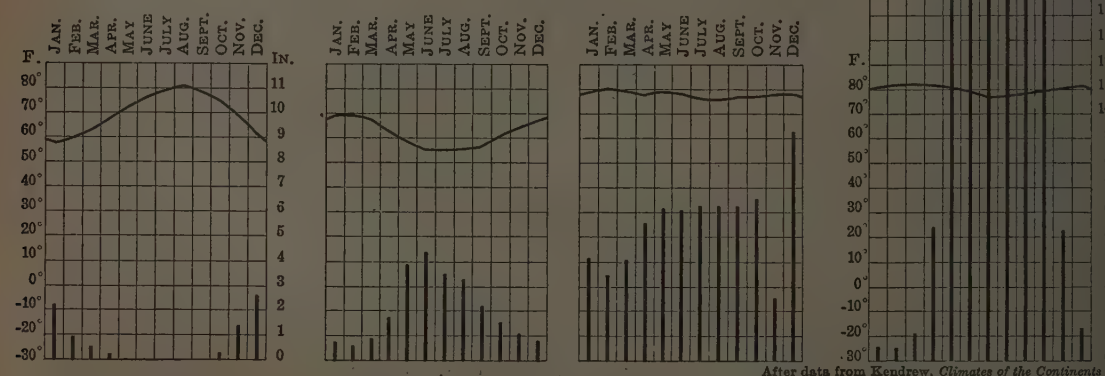

JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT. OCT. NOV. DEC.
F.
IN.
After data from Kendrew, *Climates of the Continents*
Alexandria, Egypt
Alt. 105 ft. Temp. 69.7°
Rainfall 8.1 in.
Capetown, U. of S. A.
Alt. 40 ft. Temp. 62°
Rainfall 24.8 in.
New Antwerp, Belgian Congo
Alt. 1,230 ft. Temp. 78.1°
Rainfall 66.9 in.
Freetown, Sierra Leone
Alt. 223 ft. Temp. 80.3°
Rainfall 174.4 in.

FIG. 396. Average annual temperature and rainfall for four cities of Africa

Courtesy South African Government Tourist Bureau

FIG. 397. **A railroad bridge spanning the Zambezi.** This steel arch, 450 feet above the river, carries the railway running from South Africa to the Belgian Congo. Trace the railway route on the map (Fig. 399). What products would you expect the road to carry?

Victoria Falls are behind you as you look at the picture. At this point the Zambezi plunges into a great gorge.

Clouds of spray which rise from the falls are carried as far as the bridge seen in the picture. The natives call the falls in the Zambezi "Smoke that Thunders." Can you explain why?

here all interrupted by falls near the edge of the plateau, they could not be easily used by explorers and travelers who wished to reach the interior (Fig. 397).

Also, most of Africa has a tropical climate which white men cannot endure for long periods at a time. In the tropical regions there are many insect enemies of man and especially of beasts. These insects make it impossible to use horses and cattle for transportation. In the wilds of Central Africa there lived many savage peoples who resisted the advance of explorers and therefore made travel dangerous as well as difficult. For all these reasons the exploration of Africa was long delayed, and it was called the "Dark Continent" because there was so little known about it.

How Africa helps Europe. Within the last three-quarters of a century expeditions from Europe have explored nearly all of Africa. Now it is no longer the "Dark Continent," for today most of it is better known than are some parts of South America. It has proved to be a continent rich in many valuable resources (Fig. 398). The British Empire, France, Portugal, Belgium, and Italy now control much of Africa.

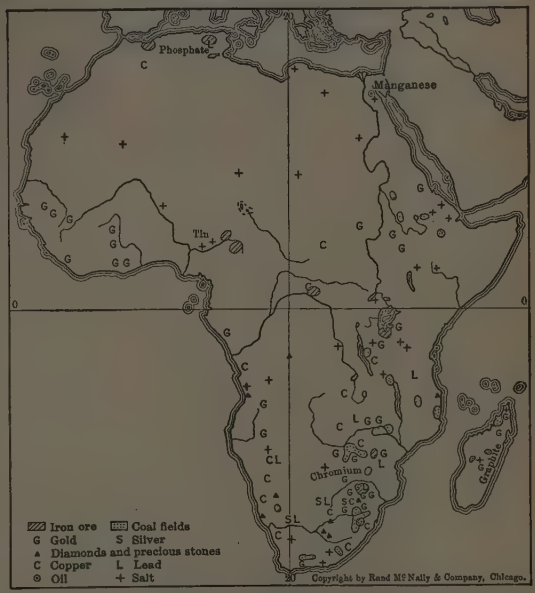


FIG. 398. **Distribution of minerals in Africa.** What metal is most widely scattered? What mineral needed in industry is lacking in most of Africa? Find out what Africa has that may largely take the place of it. Do you think Africa has been so thoroughly prospected that all its mineral deposits have been found? Define prospected.

Under these nations the resources of the continent are being developed and many kinds of valuable products secured for exportation to the home countries in Europe.

Africa is a large continent with many different climates which vary greatly according to

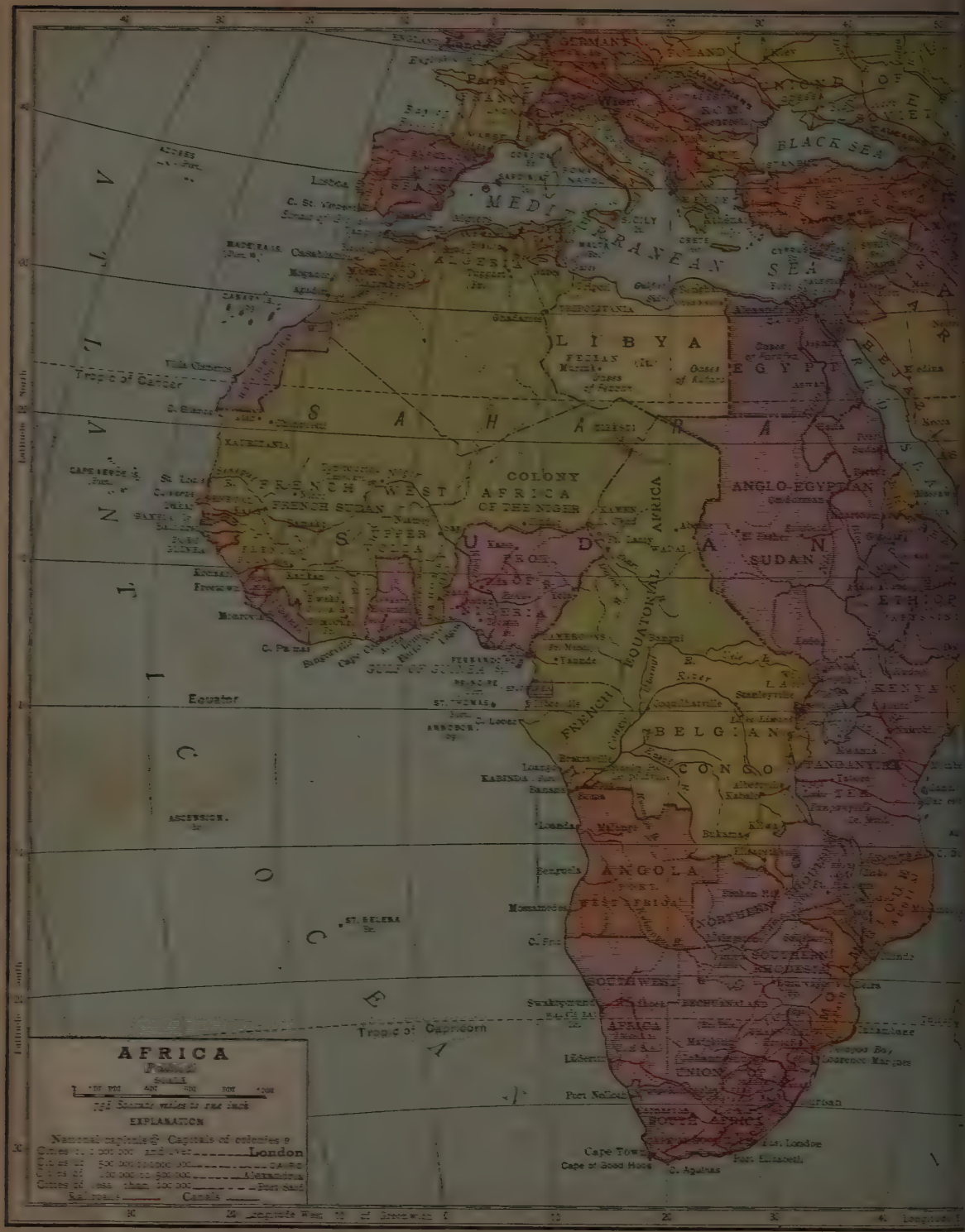
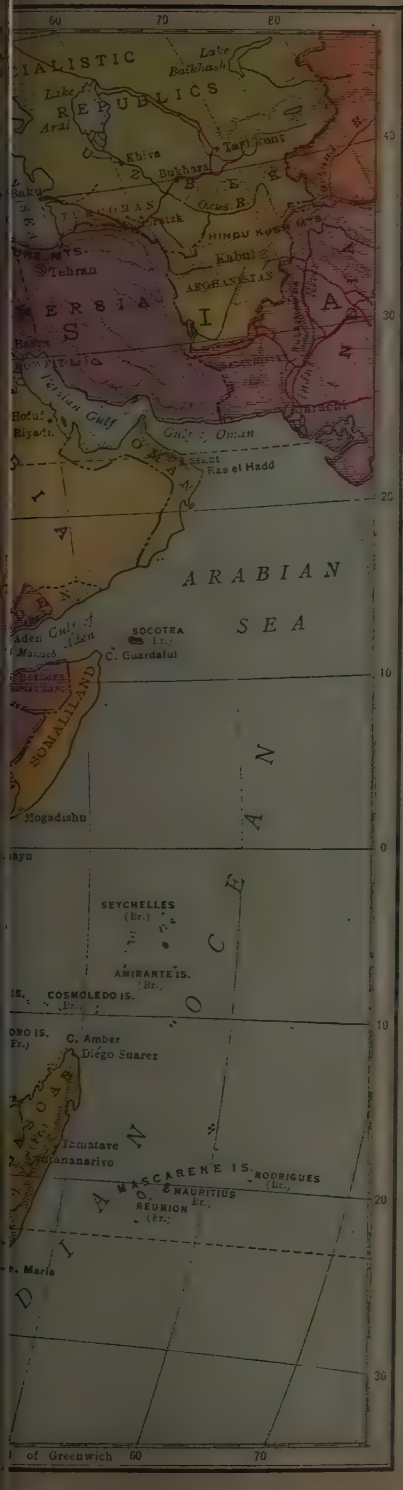


FIG. 399. A Political Map of Africa



the altitude and to the distance from the Equator and from the ocean. The value of these possessions to the home countries, therefore, depends almost entirely upon the climate of the region in which they are located.

INTERTROPICAL REGIONS

165. THE TROPICAL FOREST REGIONS

THE LESSON FORECAST

1. The reasons for the equatorial and tropical forests.
2. How the people of the forests make a living.
3. How the Congo forests are drained.
4. Value of the tropical forests to man.

The equatorial forests. On both sides of the Equator are great forests which extend from the western portion of the Guinea coast eastward to the highland areas in which are found the sources of the Nile River (Fig. 400). These forests, like those of the Amazon Basin, owe their existence to the great heat and the almost daily rains of the region (Figs. 400 and 401). Much of this extensive forest area is drained by the Congo River, which is one of the largest rivers of Africa. The forest of the Congo Basin is so dense that the rivers offer almost the only means of travel through it. Not many people can make a living here, and the population is scanty. There are few game animals, since the shade is too heavy for grass to grow, and there is little wild food of any kind. The people of the black race who are found in these forests live almost altogether on bananas, yams, and manioc, or cassava, raised in small clearings. The forests furnish many tropical tree products of great value, such as rubber, palm oil, and copal, a gum used in the making of varnish.

East of the highland area which borders upon the Indian Ocean and along the eastern slopes of the island of Madagascar dense tropical forests also are found. The heavy rainfall here is caused by the steady trade winds which blow in from the warm waters of the Indian Ocean and lose their moisture as they are cooled in passing over the land.

166. THE TROPICAL GRASSLANDS

THE LESSON FORECAST

1. Where the tropical grasslands are found.
2. Reasons for the presence of the grasslands.
3. The wild animals of these grasslands.
4. How the natives of the grasslands make a living.
5. How the Sudan is connected with the southern grasslands.
6. Why the southern grasslands are a favorable region for white men.
7. Why the central grasslands offer a favorable route for the Cape-to-Cairo Railroad.

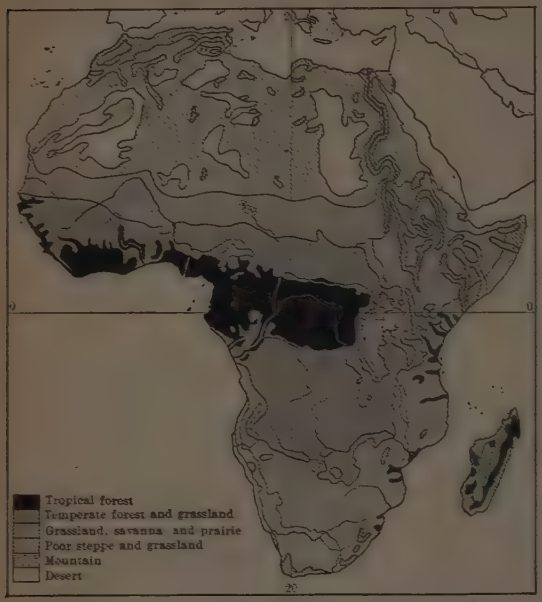


FIG. 400. **The natural vegetation areas of Africa.** Be sure to study the vegetation and rainfall maps together. Can you tell why the belt of tropical forest does not follow the Equator all the way across the continent? How much of the Sahara has no vegetation at all? Account for the strip of grassland along the Nile.

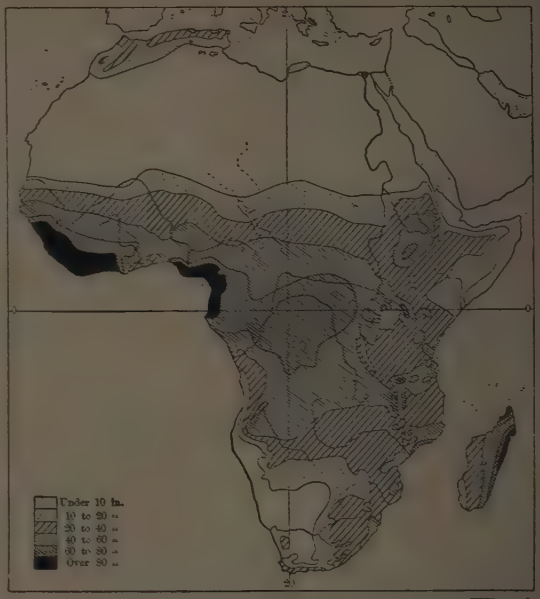


FIG. 401. **The average annual rainfall of Africa.** Why is there more rainfall on the west coast than on the east coast at the Equator? Give two reasons. Why is there more on the east than on the west in South Africa? Explain the heavy rainfall at the Equator. Account for the rainfall at the northwest corner of the continent.

The cause of grasslands. North and south of the equatorial forests in Africa, as in South America, are found extensive areas of grassland with few trees (Fig. 400). In Africa each of these regions has a short rainy season and a long dry season every year. As the distance from the Equator increases, the dry season becomes proportionally longer. The rain comes in the warmer months. While we are having summer in our country, it is the rainy season in the Sudan, the name given to the northern grassland area of Africa. While we are having our winter, which is the warm season in the Southern Hemisphere, rains fall south of the Equator (Fig. 401).

In the rainy season grass grows rapidly, and even in the drier season it furnishes an excellent food for animals. For these reasons the grass areas have become widely known for their wild animals such as the giraffe, zebra, and many kinds of antelopes. Throughout much of the grassland the natives raise great herds of cattle. Nearer the Equator the grassland has more trees, and in these regions are found great numbers of lions, elephants, rhinoceroses, and other large animals. These game animals are also found in numbers in the open grasslands farther to the north.

The Sudan or northern grassland. The northern part of the grassland area is known as the Sudan. It will probably remain largely a black man's country. Here in the drier areas live the most progressive natives in Africa (Fig. 402), many of whom depend entirely upon their cattle, sheep, and goats for a living. In the middle section of the Sudan the natives are farmers and raise crops of vegetables and grain for their own use or to sell. They live largely on durra, a grain which is ground into flour, and on cassava, a root grown as are beets and potatoes and then dried and grated into meal.

The central and southern grasslands. East of the great Congo forest is found a grassland

somewhat higher than the high plains of Wyoming and Colorado. This area contains the great Lake Victoria, the source of the main stream of the Nile, and connects the Sudan with the southern grassland (Figs. 395 and 400). The route of the proposed transcontinental railroad from Cape Town to Cairo passes through this section of Africa. The southern grassland area is higher than the Sudan and therefore not so hot. For this reason it is somewhat more favorable for settlement by white men and is being slowly developed (Fig. 402).

THE SUBTROPICAL DESERT REGIONS

167. THE SAHARA AND ASSOCIATED OASES

THE LESSON FORECAST

1. The extent and surface of the Sahara.
2. How the water supply affects routes of travel.
3. The oases and their value.
4. Why caravan routes cross the desert to the grasslands.
5. Names of some towns at the southern ends of caravan routes.

The surface and area of the Sahara. North of the Sudan, where Africa is the broadest, lies the Sahara, the greatest desert in the world. In some places the Sahara is over a thousand miles wide, and in many places its surface is rugged and even mountainous. In this great region it seldom rains except on the many higher ridges. When it does rain, the water rushes down the slopes, cutting deep valleys. Before the water has gone far, however, it sinks into the dry, porous ground or is evaporated by the heat of the sun. The country therefore contains many dry stream beds, or wadies, some of which are used as travel routes by the caravans that cross the desert for trade. The Sahara is mainly a great waste with large areas of loose sand blown about by the winds. It therefore supports few people (Fig. 403).

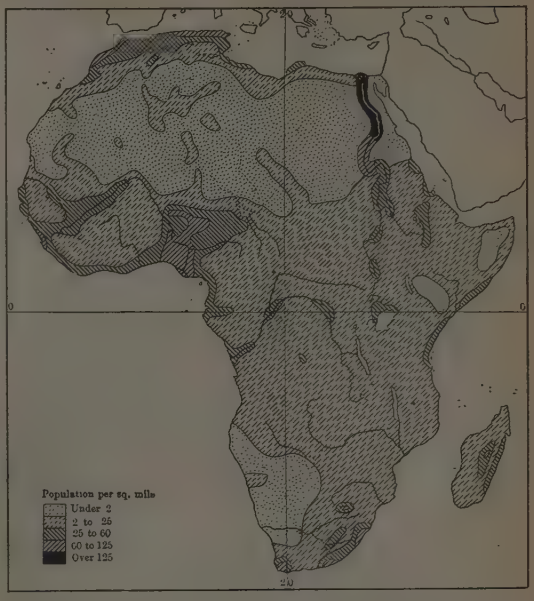


FIG. 402. **The distribution of population in Africa.** What reasons can you give for the population being greater in tropical Africa than in tropical South America? (Figs. 286, 395 and 401) How can you account for the vast uninhabited regions in northern Africa? Where is the population densest in tropical Africa? Give the reasons for your answers.

Otto C. Gilmore

FIG. 403. **A scout in the Sahara.** The man seen here has stopped to enjoy a cup of tea. Why does he wear so many clothes in a temperature which may reach 140°? He is smoking hashish, not tobacco. Look up hashish. How has he made his tea? Why has he such a small fire?

Making a living in the Sahara. Water is always a necessity and is the first thing a traveler in a desert thinks about. Travel routes are determined by the possibility of obtaining water along the way. Fortunately there are many places, although they

may be long distances apart, where water comes to the surface or can be pumped from wells. Around these desert wells grow grass and palm trees. Such places are known as oases. An oasis may be just a watering place or it may be a place large enough to support a great number of people who make a living chiefly by raising dates and by trading with the passing caravans.

In many sections of the Sahara tribes of wandering shepherds, or nomads, make a living from their herds of camels, goats, and sheep. They pasture their herds on scattered patches of grass found in many parts of the desert. When the grass in one place has all been eaten, they drive their herds and flocks to new pastures.

Travel and transportation. Because the Sahara is so near North Africa and Europe, much trade has long been carried on over it. Many caravan routes cross it from North Africa to the Sudan. Some of these routes have been in use for thousands of years, and the little villages in the oases along the way are better known to trade than are some large cities of our country and of Europe. The chief routes are those that center at Lake Chad, at the Nile, and at Timbuktu (Tombouctou) on the great northern bend of the river Niger (Fig. 399). Transportation across the desert is carried on chiefly by means of camels.

168. THE KALAHARI DESERT

THE LESSON FORECAST

1. The location of the Kalahari Desert compared with that of the Sahara.
2. How the Kalahari Desert compares in size with Sahara.
3. With what physical feature in the United States may the Kalahari Desert be compared?
4. The reason for these two deserts.

The location of the region. In South Africa at the same distance from the Equator as the Sahara lies the Kalahari Desert. This desert is not so large nor is it so dry as the Sahara. In many ways the region is much like New Mexico and Arizona. Wherever there is grass and water, the region is gradually becoming a live-stock country.

How the great African deserts were formed. The desert regions of Africa owe their existence to the fact that the winds which reach them do not blow over the ocean and so bring no moisture. These great desert areas are much like those of Atacama in South America and of Lower California in North America, and they have become deserts for the same reasons.

THE TEMPERATE REGIONS

169. THE MOIST-WINTER AND DRY-SUMMER AREAS

THE LESSON FORECAST

1. The area in our country that has a climate similar to that of the northern and southern parts of Africa.
2. Why South Africa and southern South America are unlike.
3. Why Europeans are interested in Africa.

Reasons for the importance of these areas. Because of their dry summers and moist winters, North Africa and South Africa are both very much like the southern part of California. In both sections, therefore, agriculture is well developed, the crops being like those grown in southern Europe. South Africa does not lie so far south of the Equator as does southern South America, and therefore it has a warmer winter and less severe storms.

Africa for the larger part is a newly explored region, the natural resources of which are being developed by European nations. Since a large part of Africa is under the control of European nations and many of the divisions are small, it will be easier in our study to group the divisions according to the nation to which they belong.

SOME RELATED PROBLEMS

1. Where near the Equator in Africa could you find a mild or cool climate? Why is this so?
2. What could be done to make the rivers of Africa more valuable for commerce?
3. What were the chief motives for the exploration of Africa?
4. What need do the people of Central Africa have for clothing and shelter?
5. Why do the people of the African grasslands as well as many in the forests live in thatched huts?
6. What farm implements used in our country could well be used in the Sudan?
7. Why has Africa few good harbors?
8. What do the oases of the Sahara furnish to world trade?
9. Why do most of the caravan routes of Africa extend in a north-south direction?

POSSESSIONS OF EUROPEAN COUNTRIES IN AFRICA

170. FRENCH POSSESSIONS IN AFRICA

THE LESSON FORECAST

1. The area and value of the French possessions.
2. How the people make a living in the Atlas region.
3. What surplus products the people of these regions have for trade.
4. The extent and population of French West Africa and French Equatorial Africa.
5. What these regions produce for home use and for trade.
6. How the French are helping to improve these regions.
7. The advantages in the position of French Somaliland.
8. What Madagascar produces for home use and for trade.
9. The location and importance of the cities of French Africa.
10. Problems connected with the development of French Africa.

The Mediterranean border. France controls the largest possessions in Africa of any

FIG. 404. The market place in Sali, Morocco. The town is on the Atlantic coast, near Rabat (Fig. 399). Most of the merchants you see here are selling pottery. Why are water jars generally used? The tree by the tower is a date palm. Are dates an important product in Morocco? Explain.

European country, but nearly a third lie in the Sahara and are therefore of little value. In North Africa are Morocco, Algeria, and Tunisia (Figs. 404 and 405). While Morocco and Tunisia have their own rulers, these two countries are under French protection. All three countries have a climate similar to that found on the European side of the Mediterranean. The Atlas Mountains, rising in places to heights of over 12,000 feet, separate the lower land bordering the Mediterranean from the drier regions which lie near the Sahara. The higher slopes are wooded and furnish pine and oak timber. Good agricultural land is found in the valleys among the mountains and in the coastal lowland where it can be irrigated.

Agriculture and grazing are the principal occupations of the people of North Africa, but in many sections farming is carried on in a very primitive way. Cereals, tobacco, wine grapes, and olives are raised in large

FIG. 405. **A scene in Biskra, Algeria.** Biskra is an oasis town in the Sahara (Fig. 399). Connected with the coast by rail, it is much visited by tourists, many people going there for their health. What advantages has the region as a health resort?

Study the picture closely. What kind of plants do you see? What crop would you expect to find important here?

Notice the low houses with mud walls. What climatic feature of this country makes it possible to have mud-walled houses? Why are sloping roofs unnecessary? Where in the United States did we find houses similar to these?

quantities just as they are in southern Europe. This region also favors the growing of citrus and tropical fruits. In the oases of the Sahara, especially in those of Tunisia, dates are an important crop. Morocco exports eggs and poultry to English markets. Other exports are skins, hides, and wool.

Each of these three countries is rich in minerals, especially in phosphates and iron. Phosphate is a leading export (Fig. 398).

Under the direction of the French, roads and railroads (Fig. 405) are being built, harbors are being improved, and the prosperity of the countries is increasing rapidly. Although these are all old countries, the native people (Fig. 404) have never made great use of their rich natural resources. In many ways, therefore, they are much better off under French direction.

French West Africa and French Equatorial Africa. Extending from the Atlantic Ocean eastward nearly two-thirds across the continent and southward almost to the mouth of the Congo is a territory nearly as great in extent as that of the United States. This is all under French control. Togo in French West Africa and Cameroons in French Equatorial Africa came under the control of France after the World War. The northern portion of this vast area lies in the Sahara. The rest is a tropical region, part of which consists of tropical forests. The inhabitants of this great area number nearly twenty million, but the Europeans who carry on the government and the trade number only a few thousand. While the resources are largely undeveloped, yet the exports of these sections include tropical products such as palm oil, rubber, cacao, cotton, and some timber. This region is one of the world's great sources of ivory, the ivory being secured from the tusks of the elephants found there. Railroads are being built by the French to help in bringing products to the ports which, while in most instances small, are of course important trading centers. The leading ports are those on the Gulf of Guinea and on the coast of French Equatorial Africa.

Other French possessions in Africa. At the entrance to the Red Sea and opposite Aden lies French Somaliland, a small territory also owned by France. Its position enables it to share in the commerce of the great world trade route through the Suez Canal, especially for goods going in or out of the large country of Abyssinia.

Madagascar, another French possession, lies off the coast of southeastern Africa. It

is a mountainous island with an area nearly as great as that of the state of Texas. Its surface is rough, and owing to the effect of the moisture-bearing trade winds much of the island is forested. Tropical forest products, including tan bark, resins, gums, and raffia, are exported in large quantities. Only about one-fiftieth of the island is under cultivation. The chief food crops are rice, beans, and manioc. Vanilla beans, coffee, rice, and other tropical products and hides are produced for export. Madagascar is rich in mineral resources and, besides gold, produces graphite, a mineral of great value exported in large quantities (Fig. 398). We know graphite best because it is used in lead pencils. The only large town is the capital, Antananarivo. In 1927 the chief port, Tamatave, was almost destroyed by a storm.

Cities of French Africa. Algiers, beautifully located on the Gulf of Algiers, is much visited by tourists because it is so easily reached. It is a railroad and caravan terminus and a leading port.

Tunis, on the Gulf of Tunis, is an old city lying near the ruins of Carthage which was a great city and port of North Africa in ancient times.

Fez, while not the largest city of Morocco, is by far the most important one because it is one of the three capitals and the chief center for caravan trade with the Sahara and the Sudan.

Problems of French Africa. In many ways France has been successful in its development of the territories it owns or controls in Africa. The greatest problem it is facing is that of developing the resources of these colonies. This means the building of roadways and railroads, the opening up of mines, and the introduction of farming machinery and new methods of raising crops. The result will be a great supply of raw material for French industries, and in exchange a new market for French manufactured goods.

171. BRITISH INTERESTS IN AFRICA

THE LESSON FORECAST

1. The wide extent of British influence in Africa.
2. Why South Africa is the best-developed British possession in Africa.
3. Why Southwest Africa is a stock-raising country.
4. The reasons why Rhodesia is such a highly prized region.
5. The special value of the resources of the Guinea coast.
6. Why British East Africa is a world-renowned region.
7. Reasons for the importance of British Somaliland.
8. Factors in the development of the proposed Cape-to-Cairo Railroad.
9. By what means most of the transportation is carried on in British Africa.
10. Some problems in the development of British Africa.

The wide distribution of British territory in Africa. The British either own or control more than twenty different countries in Africa. These possessions extend from Egypt southward to the Cape of Good Hope and include still other territories in both East and West Africa. Thus there are British possessions in all the climatic regions of the continent (Fig. 399).

This wide distribution of British territory is most important, since it means securing a great variety of useful products for the home country. It secures especially products that cannot be raised in temperate climates. Trade can easily be carried on between Europe and all of these British possessions in Africa either by way of the Atlantic or by way of the Red Sea, the Suez Canal, and the Mediterranean.

The Union of South Africa. Of the many British possessions in Africa the best developed are those in the southern part of the continent. The Union of South Africa at the very tip of the continent has a temperate

Courtesy South African Government Tourist Bureau.

FIG. 407. **A flock of prize sheep in South Africa.** South Africa ranks high in the production of wool (Fig. 487). What kind of climate has South Africa? (Figs. 396 and 406.) What kind of vegetation has it? (Fig. 400.) Can sheep be raised on land too dry to farm? Where is sheep raising the chief occupation in the United States? Why?

How dense is the population of the interior of South Africa? (Fig. 402.) Is sheep raising a good industry for a country of sparse population? For a region a long way from markets? Explain.

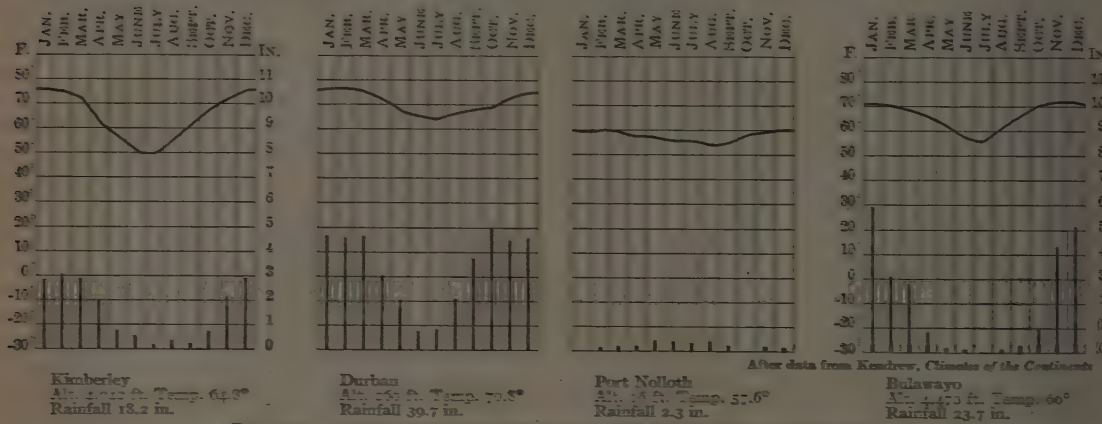


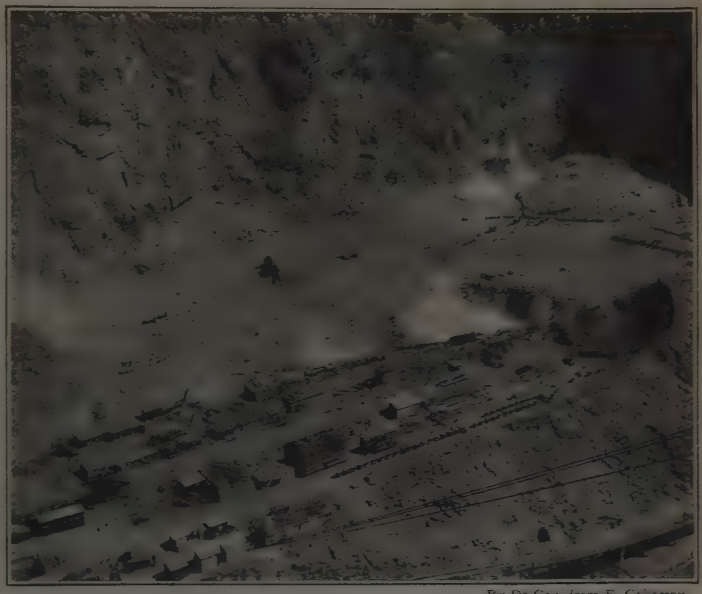
FIG. 406. **Average annual temperature and rainfall for four cities of South Africa**

climate (Fig. 406) and contains a large white population. This is naturally a grazing and farming country (Fig. 407), and in many places grazing is giving way to farming and the growing of fruits. Most of the farm products are consumed at home, but sheep and goat skins, wool and maize are important items of export. Fine fruits and vegetables in constantly increasing quantities are being shipped to Europe. This region was long known for its ostrich farms where ostriches were raised for their long feathers or plumes. In recent years, however, since fashion no longer favors the wearing of ostrich plumes, this industry has not been a flourishing one.

By far the most valuable products of the Union are minerals, especially gold and diamonds. The land around Kimberley is the world's greatest diamond-producing area (Fig. 408). From the Witwatersrand, a range of hills near Johannesburg, comes nearly one-half of the world's total gold supply (Fig. 409). Other minerals mined in large quantities are coal, copper, and tin (Fig. 398). Tin, a most valuable mineral, is found in paying quantities in only a few regions of the world.

Since there is a growing market for manufactured goods, and coal (Fig. 410) is at hand for power, manufacturing is increasing rapidly in the Union of South Africa.

Other British South African territory. Parts of South Africa are very dry, and in these sections stock raising is the chief occupation of the people. As one goes north-



By De Cou, from E. Galloway

FIG. 408. **The Premier diamond mine near Pretoria, South Africa.** The Premier is the largest diamond mine in the world, and the largest known diamond, the Cullinan, was found there. It was four inches long.

Why are diamonds highly valued? For what purpose are most of them used? Why do many of them serve as drill points and for cutting glass? Find out what material is used for cutting diamonds. What country has the most highly skilled diamond cutters? Of what element are diamonds composed? What fuel is made up of the same element? Would diamonds burn?

Do you know what we call the type of mining shown in the picture? The smoke seen is from blasts of dynamite. Why is dynamite used?

Courtesy South African Government Tourist Bureau

FIG. 409. **A view in the world's richest gold field.** This picture shows a section of the Witwatersrand in the Transvaal, from which comes about half of the world's annual supply of gold. The city of Johannesburg stands on the ridge in which the gold is found (Fig. 399).

The white mounds are heaps of crushed rock from which the gold has been extracted by the use of chemicals. The buildings house the machinery for running the mine and extracting the gold.

What is the chief use of gold? Is it the making of jewelry? Can you think of any reasons why most nations use it as a standard of value?

ward the climate becomes warmer, but owing to the increased elevation, the country is healthful. Of the different territories, the Transvaal and Natal are favorably situated for agriculture. The chief industry of the Transvaal is stock raising. Tobacco, maize, and other cereals are produced here and in Natal sugar, maize, and hides. Southern Rhodesia is a rich farming section. Maize, which is grown extensively, and tobacco are the most valuable crops, both being exported in large quantities. A great deal of Northern Rhodesia is also suitable for agriculture, maize, tobacco, and cotton being the chief crops. Considerable grazing is carried on in certain sections, and the mining of copper and lead is important. The coal fields are among the largest in the world.

Courtesy South African Government Tourist Bureau

FIG. 410. **A scene in the coal district of the Transvaal.** This district, known as the Witbank coal field, lies near the Witwatersrand. What advantage is this to both the coal miners and the gold miners? What other markets for the coal are there, since there is little manufacturing here? Why is much of it sent to the seaports?

Notice the buildings in the picture. What do you think they are for? Why do the railway tracks run into the one at the right? Do you know what the building in the center is for?

Courtesy Caterpillar Tractor Company, San Leandro, Calif.

FIG. 411. **Hauling logs in West Africa.** The logs are mahogany. For what purposes is mahogany used? Why is it especially valuable?

In what kind of forests does mahogany grow? There are some special difficulties in mahogany logging. Find out what they are.

This is a picture of a scene seventy-five miles south of Kumasi on the Gold Coast. Find it on the map (Fig. 399). What is the rainfall here? (Fig. 401.) Does this amount of rainfall account for the state of the road? Study the picture closely. What kind of wheels has the tractor?

West tropical areas. On the northern coast of the Gulf of Guinea are found several British possessions, the largest of which is Nigeria. Owing to the tropical climate, which is unhealthful for Europeans, and the character of the surface, until lately there has been but little development of this region. The chief export is palm oil. Groundnuts or peanuts, from which oil is extracted, and cacao are also grown, and rubber is produced. Cotton is raised in increasing quantities by the natives, and timber produced (Fig. 411).

British territories in East Africa. British possessions in East Africa include Kenya Colony and Uganda. The British also control Tanganyika. These territories lie near the Equator in the highest part of tropical Africa. Here are dense forests and great mountains, among them Kilimanjaro, the highest mountain in Africa, and Mount Kenya, its snowy peak almost cut by the Equator. Here, too, is Lake Victoria, the second largest lake in the world and the source of the main stream of the Nile. The wide grassy plains of this region form the big-game country of Africa and an important source of ivory. Nairobi, connected by rail with Mombasa (Fig. 413), the port and

largest town, is the center from which most expeditions start into the big-game country.

In Kenya much agriculture is carried on, the products ranging, according to the elevation, from rubber, coffee, and cotton to cereals and flax. Tanganyika exports sisal, groundnuts, known to us as peanuts, and grains, while the chief products of Uganda are cotton, coffee, and oil seeds.

British Somaliland has a small share of the trade which French Somaliland carries on with the interior countries and with other countries by way of the Red Sea.

Zanzibar, Pemba, and a number of other small islands off the east coast of Africa in the Indian Ocean are British possessions. The most interesting of the group is Zanzibar (Fig. 412), the chief clove-producing region of the world. Pemba also exports cloves. The coconut industry ranks next to the clove.

Stretching northward from Uganda to the frontier of Egypt is Anglo-Egyptian Sudan, a great territory partly under British control. This region is the chief source of the world's supply of gum arabic and ivory. It is also becoming noted for its production of cotton, the chief crop. Grazing is carried on, and grain crops, specially millet, are raised in increasing quantities.

Cities of British Africa. The chief cities of South Africa are Johannesburg, the largest city and a flourishing railroad center in the gold country; Cape Town at the tip of the continent, a modern port and business center (Fig. 414); Port Elizabeth, Cape of Good

Publishers Photo Service

FIG. 413. **Natives carrying ivory to the wharves, Mombasa.** Can you explain what ivory is? Name as many of its uses as you can think of. Why should the city of Mombasa on the east coast of Africa be an important ivory port? (Sec. 171, p. 354, par. 2.) How has this ivory probably been transported across the country?

By De Cou, from E. Galloway

FIG. 412. **A street in Zanzibar.** The city of Zanzibar lies on the island of the same name off the east coast of Africa (Fig. 399). About how far is it from the mainland?

The islands of Zanzibar and of Pemba near by are known as the Clove Islands. In Zanzibar alone over 60,000 acres are planted to cloves. The city of Zanzibar is called the clove capital of the world. Can you explain what cloves are? Ask your mother or the grocer to give you a sample. Find out what other much used spices are produced in Africa.

In this illustration note the crooked streets and the heavily loaded cart which the men are pushing. What modern convenience do you see here?

Hope Province, and Durban, Natal, are both ports on the Indian Ocean with excellent rail connections with the interior. Durban is the chief port and a flourishing commercial city (Fig. 415).

Two other British cities are Kimberley, the center of the great diamond fields, and Khartoum at the junction of the Blue Nile and the White Nile. Because of its situation, Khartoum is a busy center of trade with the Sudan (Fig. 416). It is also at the southern end of the railroad that is being built from Cairo. This railroad is a section of the proposed railroad from the Cape of Good Hope to Cairo. As yet only the northern and southern sections of this great transcontinental road, known as the Cape-to-Cairo Railroad, are completed. Travel and transportation between the two sections is therefore by means of caravan or by boat.

In spite of the development of railroads and river routes, a large part of the trade in Africa is still carried on by caravan or by human porterage. This means that the loads must be carried on men's heads or backs (Fig. 413). A trader's or explorer's outfit must therefore include many native porters who must be fed and cared for throughout the journey.

Problems in the development of British Africa. The development of these countries must depend largely on native labor. While many of the natives are unwilling to work, others are very efficient, especially those in South Africa. Most of the workers in the diamond mines are native blacks of high intelligence. Basutoland, one section of South Africa, is set apart for the natives, and a white man cannot settle in the country without permission.

The great problem everywhere in Africa is that of keeping on good terms with the natives and helping them to improve their condition. Still another problem is how to make it easier to get products to market.

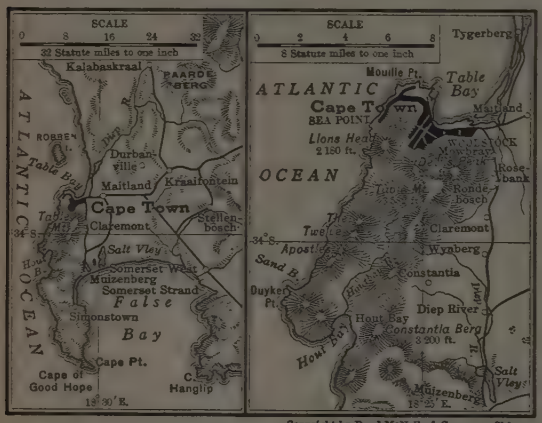


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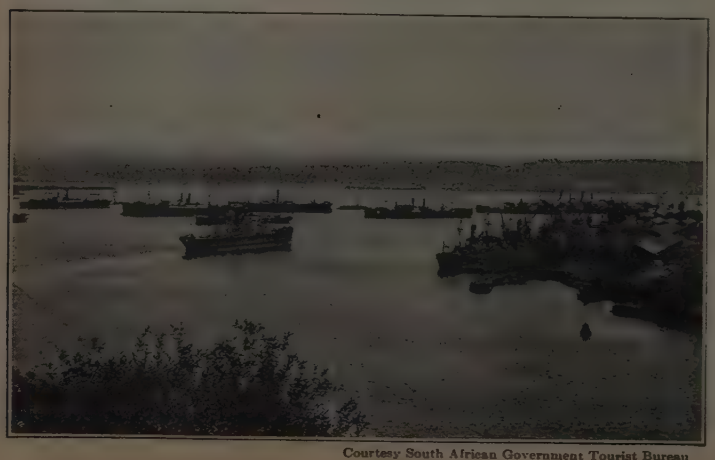
FIG. 414. **Maps of Cape Town and surrounding region.** On the map to the left draw a rectangle showing the area covered by the map on the right. Can you explain why the city is so irregular in shape? What are the advantages of Cape Town's location for trade and commerce? the disadvantages?



Courtesy South African Government Tourist Bureau

FIG. 415. **The harbor at Durban.** What is the location of Durban? (Fig. 399.) The harbor here is a landlocked inlet which has been deepened for ocean-going vessels. Durban is a busy port, as this picture well shows. Between what countries do you think most of this trade is carried on?

Durban is often spoken of as the "halfway house." Can you explain why? What city on the South Atlantic coast of the United States has a climate similar to that of Durban? (Fig. 145.)

By Cowling, from E. Galloway

FIG. 416. **A market scene in Khartoum, Anglo-Egyptian Sudan.** The market seen in this picture is in the native quarter of Khartoum. Grain, dates, baskets, and rope are offered for sale here. Can you find these articles in the picture? How does this street differ from the streets with which you are familiar? Study the picture. Can you tell what building materials the natives use?

On what well-known river is Khartoum located? (Fig. 399.) See if you can find out with what cities Khartoum is connected by rail. What advantages in location do you think Khartoum has for trade?

Judging from its temperature and rainfall (Fig. 420), do you think irrigation is necessary in the production of crops in the vicinity of Khartoum?

This is a serious problem in a region where the expense of building railroads or even highways is heavy. In many parts of the region, too, animals, because of the diseases to which they are subject, cannot be used for transportation. In some parts of the British possessions vegetation grows so rapidly that it is difficult to maintain roads or even trails wide enough for two men with loads to pass each other.

Today the British territories in South Africa have a government much like that of Canada with almost complete control of their own affairs. The rights of the natives to have a voice in the government have not, however, been satisfactorily settled.

172. BELGIAN AND PORTUGUESE INTERESTS IN AFRICA

THE LESSON FORECAST

1. The location and area of the Belgian Congo.
2. The reasons for the nature of the climate and vegetation.
3. What is produced in this region for home use and for trade.
4. Why Angola is largely a grassland.
5. Location and value of Portuguese Guinea.
6. Why Mozambique is a valuable possession.
7. Why some cities have grown in importance.
8. Problems in the development of Belgian and Portuguese territory.

The Belgian Congo. The area of Belgian Congo about equals that of all our southern states. It lies mostly in the valley of the Congo and is in part a dense tropical forest and in part a grassland. The forested section (Fig. 400) is the most valuable because of its timber, palm oil, palm nuts, rubber, copal, and ivory, all of which are exported. Coffee, cacao, rice, tobacco, and other subtropical products are grown, and cattle raising is a growing industry. The Belgians have succeeded in the difficult task of training the African elephant for a work animal (Fig. 417). The country is also rich in copper and gold. Copper is mined with the help of native labor, and gold and diamonds are also produced (Fig. 398).

While the Congo River is broken by falls, it is navigable from its mouth to Matadi

Courtesy Minister of Colonies, Brussels

FIG. 417. **An elephant-training station in the Belgian Congo.** This picture was taken at Api in the lower Uele River valley (Fig. 399).

The elephants are first made acquainted with their drivers. Then they are taught to haul loads and to do such work as following a furrow. The lessons usually last only two or three hours a day. What are the elephants in this picture being taught? For what kind of work do you think elephants are especially useful?

(Fig. 399), a distance of ninety-five miles, and above the falls there are more than 3,500 miles of navigable streams. Railroads have been built around the falls to the three Atlantic ports from which products can be shipped to Belgium and other European countries.

The Portuguese lands. Portugal has a number of possessions in Africa, of which Angola, or Portuguese West Africa, and Mozambique, or Portuguese East Africa, are by far the largest. Angola is largely a grassland, being a moderately high plateau lying between the tropics and the desert. It has a healthful climate. Among its products are coffee, rubber, wax, sugar, vegetable oils, and ivory. Cotton is grown, but not in great abundance. On the coast, over a thousand miles in length, are three small ports connected by short railroads with the edge of the interior country (Fig. 399). The chief exports from the coastal plain are gum arabic, copal, palm oil, and rubber, and from the interior maize and cassava. Extensive mineral deposits exist but have not been worked to any extent. Mozambique, or Portuguese East Africa, is mainly an agricultural country. Sugar cane and maize, cotton and coconuts are important products.

Cities and problems of the people. Cities in these countries are not large, but many of them are useful because of their location. Leopoldville, the trade center of the Congo, and Lourenço Marques, the port of Mozambique, are the best known. They are both natural commercial points, because of their position (Fig. 399).

Belgium, a densely populated manufacturing country, is deeply interested in developing trade between the Congo and other countries. Portugal, a commercial country, is also interested in developing trade in its colonies. For the Belgian Congo the chief problem, in this country of dense forests and rivers broken by falls and rapids, has been one of transportation. The population of Angola has been rapidly decreasing for a number of years. Since native labor is necessary for the development of the country, this steady decrease in population has become a serious problem.

173. ITALIAN AND SPANISH LANDS IN AFRICA

THE LESSON FORECAST

1. The extent and population of Libya.
2. Location and resources of Eritrea and Italian Somaliland.
3. Why its possessions in Africa are of doubtful value to Spain.
4. Reasons for the location and growth of the leading cities.
5. Problems connected with the possessions in these regions.

Italian territory: Libya, Eritrea, and Somaliland. Libya, the largest Italian colony in Africa, lies just across the Mediterranean from Italy, bordering that sea for more than a thousand miles. The inhabitants number about three-quarters of a million, one-third of this number being Arabs. The country as a whole is barren and in the south reaches out into one of the driest parts of the Sahara. Most of the people live near the sea and raise such products as olives, lemons, figs, and other warm-country fruits, and also wheat and barley. Sponges, which are procured from the waters of the Mediterranean, are a leading export.

Parts of the drier section are used as pasturage and contain many wandering tribes, called nomads, which make their living by preying on passing caravans following the desert trails into the Sudan. The caravan trade, therefore, is decreasing.

Eritrea, extending for over 600 miles along the Red Sea, and Italian Somaliland, bordering the Indian Ocean for about 1,200 miles, include both hot lowlands and cooler highlands. While conditions in general do not favor agriculture, that industry is carried on by natives and Italian colonists. Eritrea has valuable deposits of salt and potash and produces many sea pearls (Fig. 398). Cattle and camel raising are the chief occupations of many of the people.

Spanish possessions. The Spanish possessions in Africa are small and of little value. They include a small area known as Ceuta across the Strait of Gibraltar from Spain, Rio de Oro, and Adrar on the western side of the Sahara, and Spanish Guinea and several islands off the coast. The problem of governing these scattered possessions is a difficult one because of the people of the Riff in Ceuta who live in a rough country and are not easily controlled. The other regions, because they yield few products of value, also present a problem. The Canary Islands lying off the coast from Rio de Oro also belong to Spain. These small, well-populated islands are on important steamer routes. They have a fairly large trade with the United States.

Cities and problems of the people. The only city of any size in the regions controlled by Italy and Spain is Tripoli in that part of Libya once known by the same name. Tripoli is a port well located on a small bay and is the terminus of several old caravan routes to the Sahara and the Sudan. Its trade is therefore largely in desert products.

Italy and Spain both find their African possessions a source of expense. But they keep them partly for the protection of the home countries, since it would be a disadvantage to have these near-by territories owned by other nations. It is indeed a difficult problem to aid the people to develop the resources of these possessions which yield so scant an income.

SOME RELATED PROBLEMS

1. In what way would more railroads help Africa?
2. Why was North America explored by Europeans long before Africa?
3. What crops grown in Africa are also extensively grown in our own country?
4. Why do the forests north and south of the Equator gradually give way to grasslands and deserts?
5. Why is not lumbering a greater industry in Africa?
6. Why are grasslands rather than forests the home of the "big-game animals"?
7. Do you think the idea of replacing caravans of camels in the Sahara with trains of automobile trucks a good one?
8. In what ways may air transportation aid in the development of Africa?
9. How does the vegetation of Africa show the use that can be made of the land?
10. What do the gardens of North Africa contribute to the food supply of France?
11. How are the great mountain peaks of Central Africa like those of the Central Andes?

By De Cou, from E. Galloway

FIG. 418. **A market scene in Luxor, Egypt.** Luxor lies on the east bank of the Nile about 450 miles above Cairo (Fig. 399). Near by, across the Nile, are the ruins of Thebes, much visited by tourists (sec. 1). The ruins of the famous temple of Luxor are especially interesting.

From the picture do you think the streets of this town have been laid out regularly? How do the merchants here try to protect their wares from the hot sun?

The Nile is navigable to Aswan over a hundred miles upstream from Luxor. How do you think the possibility of easy transportation here helped in the development of ancient Egypt?

INDEPENDENT COUNTRIES OF AFRICA

174. SOME SELF-GOVERNING AREAS

THE LESSON FORECAST

1. Why the mention of Egypt always suggests the Nile.
2. How Egypt may be thought of as a gift of the Nile.
3. How irrigation is carried on.
4. What is produced for home use and for trade.
5. How Egypt is related to Great Britain.
6. Where Ethiopia is located.
7. Why Ethiopia has a variety of climates and crops.
8. What the people produce for trade.
9. How Liberia had its beginning.
10. The nature of the country and its possibilities.
11. The location and importance of the leading cities and towns of the independent territories of Africa.
12. Problems the independent countries have to solve.

Egypt: the world's largest oasis. When Egypt is mentioned, one thinks first of the Nile, because it is the Nile Valley that through thousands of years has supported a dense population. Long before Greece and Rome were great nations Egypt was rich and powerful, as records and the ruins of her ancient temples and tombs have proved (Fig. 418). Egypt is only a narrow strip of the great desert of Africa, and the Nile obtains its waters high up among the mountains of Central Africa. For more than 900 miles not a stream flows into the Nile. This clearly shows the dryness of the surrounding country (Fig. 420).

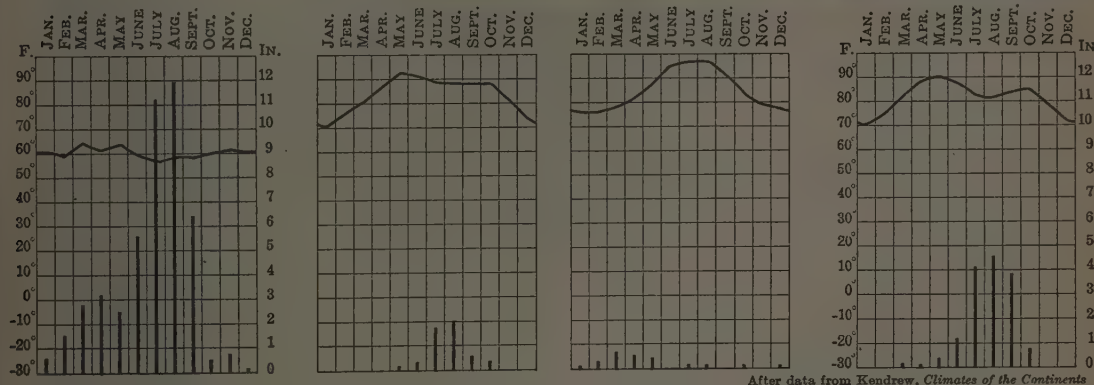
Each year the Nile floods the valley through which it flows, and the wide plain north of Cairo which has been formed by its delta. This flood water brings down great quantities of silt with it, and in this way the land is both enriched and watered. The crops planted after the flood flourish and grow rapidly. Each farmer has only a small plot of land to work, but because of the great fertility of the soil that is all he needs. Many people therefore can get a living from a small area.

The Nile waters are also used for irrigation (Fig. 419). Dams have been built to keep the flood water back until it is needed. Land in irrigated areas will yield several crops each year because of the warm sunshine which makes it possible for plants to

Ewing Galloway

FIG. 419. **An irrigation canal in lower Egypt.** A number of great dams have been built along the Nile to hold back its waters during the yearly overflow. One of these dams is located at Aswan and another at Asyut (Fig. 399).

It is through such canals as the one shown in this picture that water from the Nile is carried to the thirsty fields. What do the rainfall graphs (Figs. 396 and 420) and the rainfall map (Fig. 401) show you about the need for irrigation in this region?



After data from Kendrew, *Climates of the Continents*

Addis Ababa, Ethiopia
Alt. 8,005 ft. Temp. 60.2°
Rainfall 47.1 in.

Khartoum, Anglo-Egyptian Sudan
Alt. 1,280 ft. Temp. 83.5°
Rainfall 4.9 in.

Berbera, British Somaliland
Alt. 31 ft. Temp. 85°
Rainfall 2.4 in.

El Obeid, Anglo-Egyptian Sudan
Alt. 1,860 ft. Temp. 81.5°
Rainfall 15.3 in.

FIG. 420. **Average annual temperature and rainfall for four cities of northeastern Africa**

thrive at any season provided they can get enough water.

Cereals, including rice, and beans are grown for food, and in the irrigated region cotton, vegetables, sugar cane, and fruit are also raised. The cotton grown is long fibered and is especially valuable in spinning certain kinds of cloth. Cotton is the chief export.

Egypt, formerly a possession of Great Britain, is now an independent country. The British, however, retain the right to protect the Suez Canal because it is necessary to British trade with Africa, India, and eastern Asia.

Ethiopia, an ancient empire. Ethiopia, better known as Abyssinia, is a kingdom thousands of years old, but its resources are still little developed. It is a mountainous region and, though it is located in the tropics, has many varieties of climate. Tropical products can be grown in the lowlands and temperate region and cereals in the higher, cooler regions. The country, however, is so backward in its development that except for small quantities of coffee grown for export, agriculture is carried on solely to raise foods for home use. Cattle, sheep, and donkeys are raised.

The exports are mostly tropical tree products, such as gums and wax, hides and skins from the animals that are raised in the cooler pastures, coffee, and civet, a product

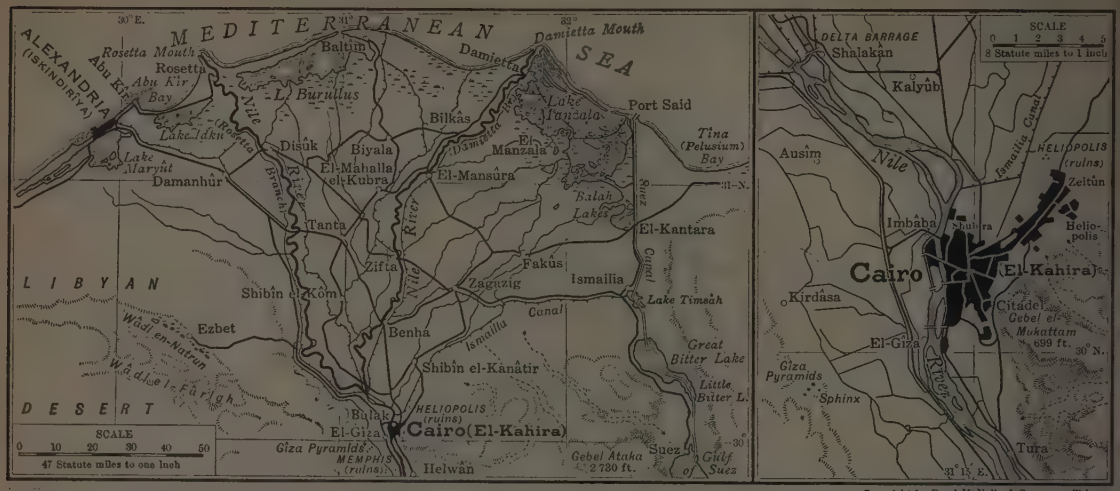


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FIG. 421. **Maps of Cairo and the delta of the Nile.** On the larger map draw a rectangle showing the area covered in the smaller map. What famous canal is shown on the larger map? Notice the number of large channels into which the Nile divides after it leaves Cairo. Can you explain why so many canals have been constructed in the delta of the Nile? Trace the canal routes from the delta to the Suez Canal.

like musk obtained from the civet cat. Agriculture and stock raising are the principal industries of the people. The chief products include cotton, sugar cane, dates, and coffee. The country has extensive mineral wealth (Fig. 398), valuable forests, and abundant water power, but these are not being used. Since Abyssinia is so unfortunate as to have no seacoast, all of its trade must pass through other countries.

Liberia, a negro republic. Liberia, with an area about equal to that of Kentucky, is a republic founded early in the nineteenth century as a dwelling place for freed American negroes who wished to make their home in Africa. It is a country of tropical forests (Fig. 400) and is inhabited by uncivilized natives except near the coast. The country's resources are enormous but as yet largely undeveloped. The products are rubber, palm oil, palm nuts, coffee, and ginger, as in near-by regions having a similar climate. Rubber plantations are being established, and the rubber industry, although only in its beginning, gives promise of being successful. Cotton and cacao are grown here in a limited way.

Cities of independent Africa. Cairo, an old city at the head of the Nile delta, is the largest city in Africa (Fig. 421). It is much visited the year round by tourists, both because of its many interesting buildings and its history, and because it is the starting point of trips to the Pyramids and Sphinx, or up the historic and beautiful Nile Valley. Bulak (Fig. 421), the river port of Cairo, is famous for its printing works, founded in 1822, and for its manufacture of various kinds of paper.

Alexandria, at the mouth of one of the branches of the Nile, is an old city once belonging to Greece. Because it is near the Suez Canal and shares in the trade through that famous waterway, it is a flourishing port. Through it passes the trade with the Nile Valley and much of that of the eastern Sudan.

Port Said, at the entrance to the Suez Canal, is a port of call for all vessels passing through Suez.

Addis Ababa, the capital of Ethiopia, and Monrovia, the capital and the port of entry of Liberia, are the principal cities in those countries (Fig. 399). Monrovia is connected by regular steamship service with Europe and by cable with both Europe and New York.

Ewing Galloway

FIG. 422. Threshing grain in Egypt. Notice in the picture the sledge drawn by a donkey. It is called a norag and is used for threshing grain. There are eleven disks in the norag which separate the grain from the straw. The wind is then used to separate the chaff from the grain. What is this process called?

Compare this scene with Figs. 20, 184, and 353. What differences do you think the use of modern threshing machinery would make in the cost of grain in Egypt? Turn ahead to Fig. 466. Which illustration pictures the more primitive method of threshing?

Problems of the people of independent Africa. As a result of the World War, Egypt in 1922 was made an independent country. Now its greatest problems are still further to develop its natural resources and its methods of agriculture (Fig. 422), and to prove that the new government can develop the country and at the same time win the confidence of neighboring peoples. Because of Egypt's position and the fact that it is near great trade routes, order must be maintained over the interior tribes, so the trade of other nations will not be interfered with.

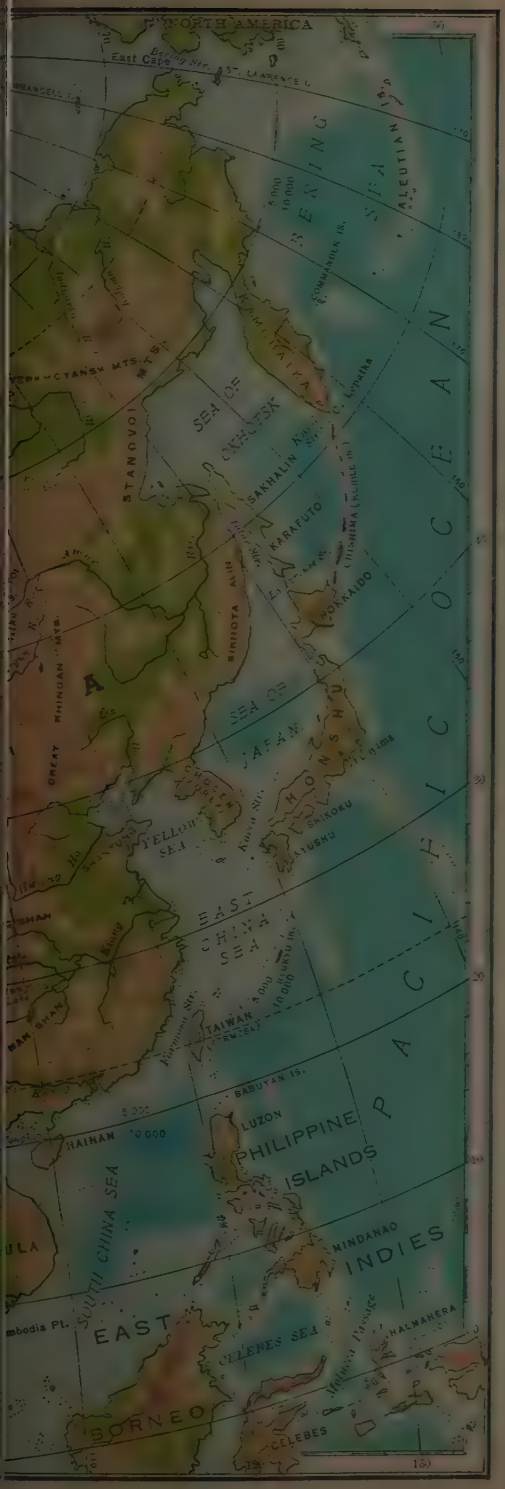
Ethiopia's greatest problem is the development of its rich natural resources. There are excellent pasture lands and valuable deposits of gold and potash salts, while the forests yield gums and rubber. The country needs intelligent leaders to encourage the building of railroads, develop its resources, and improve the condition of the people.

Liberia is a country occupied only by negroes, many of them in a low state of civilization. Negroes generally have not proved capable of governing themselves without some guidance. Liberia has yet to prove that it can maintain a firm government, and that it can develop the rich and varied resources of this tropical region.

SOME RELATED PROBLEMS

1. Why is the Suez Canal an important part of a great world trade route?
2. Why was the Nile Valley a favorable place for the early development of a high civilization?
3. In what parts of Africa is mining now important?
4. Why are all the large cities of Africa in the temperate regions?
5. Why have not large cities grown up at the falls of African rivers just as they have developed in many such places in our country?
6. Why have Cairo and Alexandria for so long been important cities?
7. Why are not the large river valleys of Africa so favorable for travel and for transportation as are the large river valleys of our country?
8. Why is the lower valley of the Nile so much more densely populated than the upper valley?
9. What do the pyramids and tombs of Egypt tell us about the ancient prosperity of the country?
10. Why do some parts of Ethiopia have a mild climate?
11. Why was ancient Egypt often at war with the countries of southwestern Asia?

FIG. 423. A Physical Map of Eurasia



ASIA

175. WHAT THE MAPS, TABLES, AND GRAPHS SHOW

Problems:

1. Why are there great seasonal contrasts of climate in different sections of Asia? (Fig. 424.) (*a*) During what months would you expect the interior of Asia to be cold? When would you expect it to be very warm? Give reasons. (*b*) Winds always blow toward regions of warm or light air. When should eastern and southern Asia have inblowing winds? when outblowing? What would be their directions? (*c*) When should these sections have a rainy season? a dry season?
2. How can you determine directions upon the map of Asia? (Fig. 427.) (*a*) What direction is indicated by parallels? (*b*) What direction is the Caspian Sea from the Sea of Japan? (*c*) What direction is Iceland from Norway? (*d*) What direction is eastern Siberia from North America? (*e*) Find a place on the map of Asia where the direction toward the top of the page is west, another place where the direction toward the top is east, and still another place where the same direction is north. (*f*) What direction is shown by meridians? (*g*) What direction is the Bay of Bengal from the Plateau of Tibet? (Fig. 423.) (*h*) What direction is Spain from Great Britain? (Fig. 427.) (*i*) What direction is the central group of the Aleutian Islands from Bering Strait? (*j*) Can you find a place on the Asia map where the direction toward the left margin of the page is south, another place where the direction toward the right margin is south, and still another place where the direction toward the bottom of the page is south?
3. How is Asia divided by an extensive highland? (*a*) What are the several sections of the highland that extends from the Black Sea eastward to the Pacific? (*b*) What lowlands lie to the north of these highlands and what lowlands to the south? (*c*) Where is the highest land of Asia as shown by the sources of the large rivers? (*d*) Why cannot the people of southern Asia easily trade with those of northern Asia?
4. Why are not the peninsulas of Asia equally well populated? (*a*) Why are fewer people found in Arabia than in Anatolia? (*b*) How do Kamchatka and Chosen compare as to the number of inhabitants? (*c*) How can you account for the dense population of India and Indo-China? (Fig. 425.)

THE CONTINENT WITH THE OLDEST NATIONS

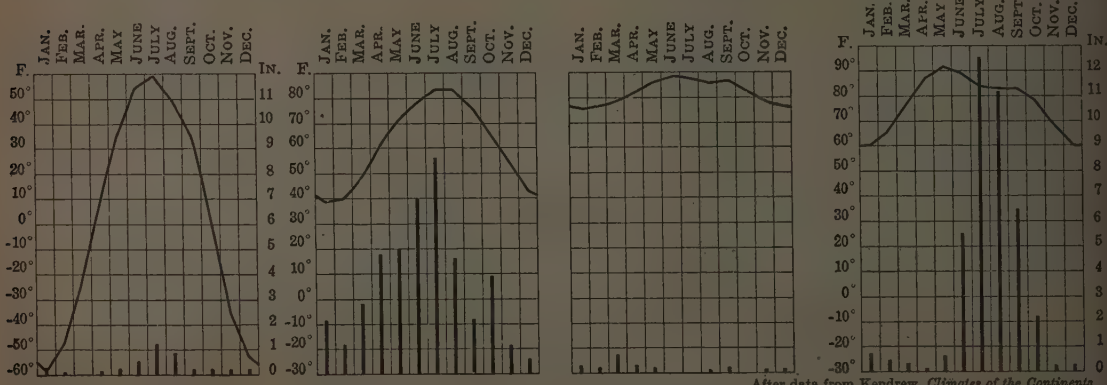
176. HOW ASIA IS DIVIDED BY THE GREAT CENTRAL HIGHLANDS

THE LESSON FORECAST

1. How Asia compares in size and population with other continents.
2. How the surface of Asia compares with that of Europe.
3. The great contrasts in temperature and rainfall.
4. What is meant by the monsoon winds.
5. How the monsoons affect the life of the people.
6. Why the central highlands are a barrier.
7. The usefulness of the northern plains to man.
8. Why the rivers of the northern plains can be used only part of the time.

The diversity of physical conditions. Asia, the largest of the continents, contains more than one-half of the people of the world, and half of these people are found in the two great countries of India and China. Northern Asia is very sparsely peopled, and in parts of southwestern Asia there are no inhabitants. These facts suggest that this great continent has a wide variety of natural conditions, some of them favorable and some unfavorable for habitation. Since people can live only where they can raise crops or where there is animal life, this uneven distribution of population shows that Asia must have great differences in climate and surface features (Figs. 423, 424, and 426).

How the highland barrier divides the continent. We have seen that, because of the great highland which runs nearly east and west across the continent, northern Europe differs from southern Europe in climate and in the ways in which people make a living. The same thing is true in Asia, only on a much larger scale, for Asia is much larger than Europe and its interior sections are farther from the warm oceans. The great highland, the highest in the world, divides the very cold northern portion from the very warm southern countries. Asia has also a number of very dry areas or deserts. These areas are roughly bounded by mountain ranges that branch out from the Pamirs in eastern Afghanistan. From this center to the eastward extend the Himalayas, the highest mountains in the world (Fig. 423). North of this great mountain range lies the high Plateau of Tibet, which forms the southern part of a series of plateaus and mountain ranges occupying a great part of eastern Asia. To the west of the Pamirs is the Hindu Kush Range which merges into a plateau extending far into Anatolia. These



After data from Kendrew, *Climates of the Continents*

Verkhoyansk, Siberia
Alt. 330 ft. Temp. 2.7°
Rainfall 3.9 in.

Hankow, China
Alt. 118 ft. Temp. 61.9°
Rainfall 43.8 in.

Aden, Arabia
Alt. 94 ft. Temp. 82.1°
Rainfall 2.3 in.

Benares, India
Alt. 267 ft. Temp. 77.2°
Rainfall 40.6 in.

FIG. 424. Average annual temperature and rainfall for four cities of Asia

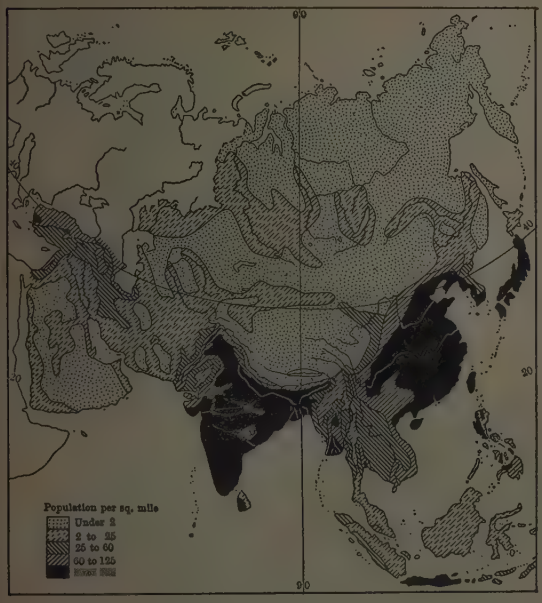


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FIG. 425. **The distribution of population in Asia.** Explain the reasons for the scanty population of central and northern Asia. Do the same reasons apply to all of Asia? What countries have the densest population? How do rivers affect the distribution of the population? How do highlands?

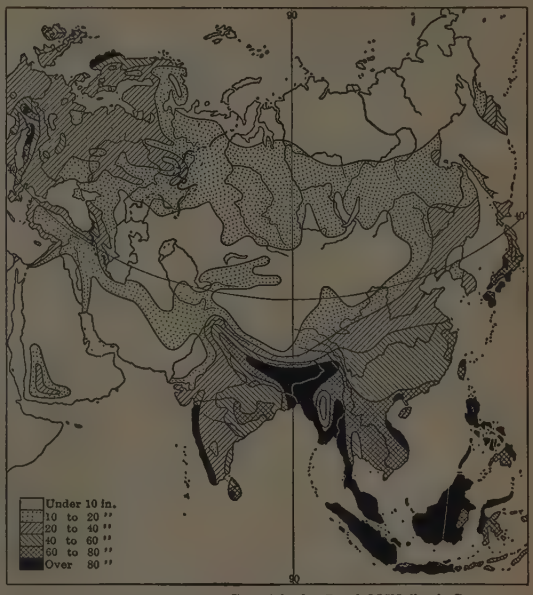

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FIG. 426. **The average annual rainfall of Asia.** What parts of Asia have the heaviest rainfall? To what winds are they exposed? Compare these areas with the areas of heaviest rainfall in the other continents. How do you account for them? How many deserts are there in Asia?

mountains and plateaus cut Asia into a number of climatic divisions.

The monsoon regions. Among the most interesting of the climatic divisions of Asia are the monsoon regions of southern and eastern Asia. In these latitudes near the Equator the winds change with the seasons. In summer the winds blow toward the hot interior of the continent. These winds, blowing as they do from the warm ocean, are laden with moisture. This is the season of the wet monsoon. The winds bring heavy rains and a hot, moist climate to the low-lying plains, but the heaviest rains occur where the winds rise to cross the high mountain wall of the Himalayas (Fig. 426). Thus the southern slopes of this region receive a heavy rainfall in the warm months and have a dense vegetation. In these hot, moist regions vegetation grows rapidly, and here the population is very dense.

In the winter months the winds blow toward the warmer ocean from the colder interior regions of the continent and consequently are drying winds. This is the season of the dry monsoon when the lower lands have almost no rainfall.

The highest mountains are snow-capped the year round. Because of their severe climate and their height, and because there are but few passes by which they can be crossed, they form a barrier to travel. These conditions prevent the people of central and southern Asia from trading with each other. The central plateaus, because they are far from the sea and receive but little rainfall, are extremely dry.

The northern plains and uplands. Northern Asia is a great plain continuous with the plain of northern Europe. We have seen how the climate of that plain in Europe grows drier from west to east. In Asia the plain, which lies even farther from the ocean, is still drier. Here the contrasts between summer and winter are very great. In summer the days are hot and the nights usually cool.

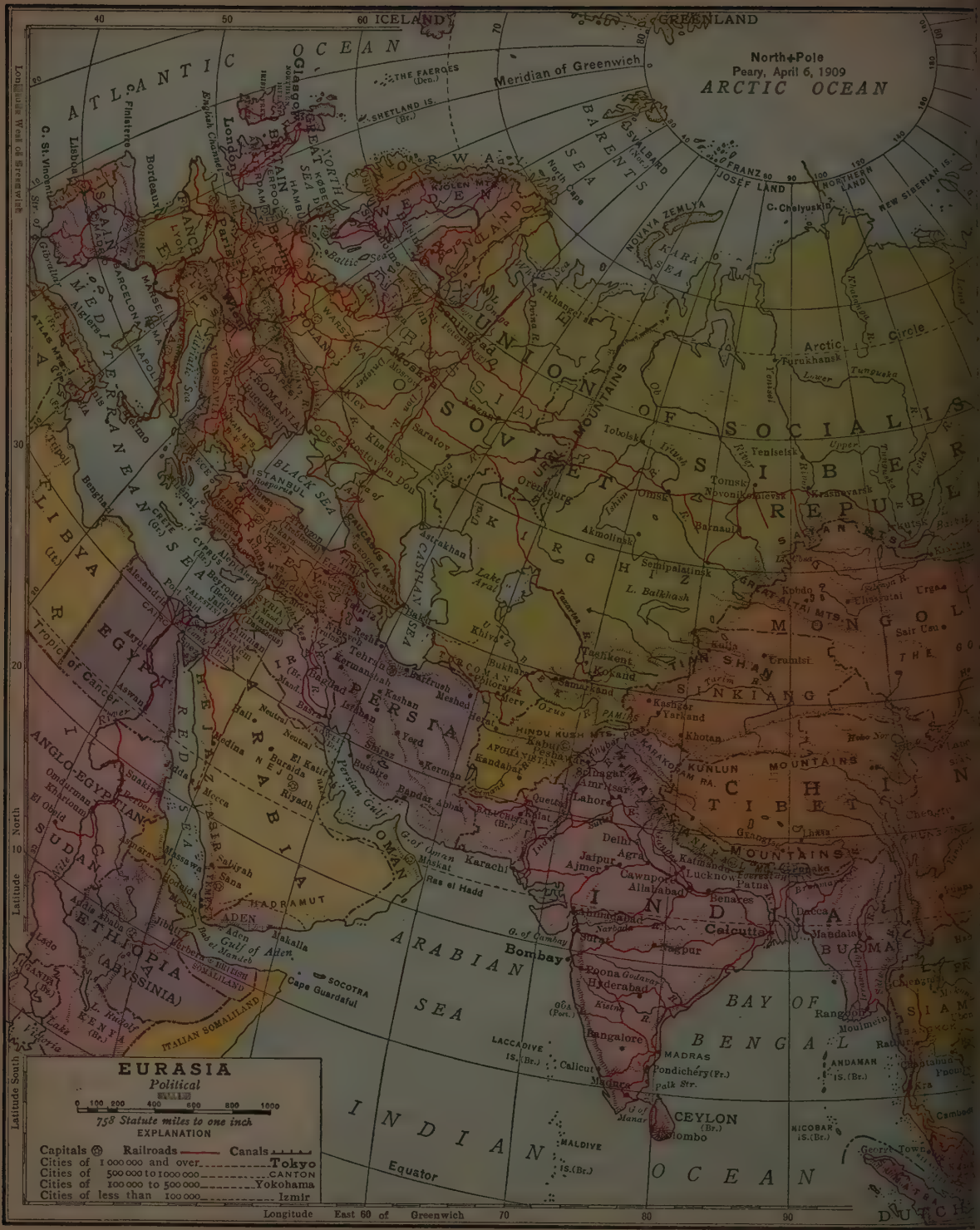

FIG. 427 A Political Map of Eurasia

The winters are very cold, much colder than in any part of the colder sections of North America or Europe.

Certain portions of the Asiatic plain have good soil and can be used for farming. The northern portion, however, is covered with a great forest mostly of evergreen trees such as are found in central Canada. This is one of the great forested areas of the world, and it extends northward as far as there is moisture enough and it is not too cold for trees to live. Beyond the forested region lies the tundra where only shrubs and mosses will grow in the short, warm summer season. Both the forest and the tundra regions naturally have few inhabitants.

Across this northern plain flow a number of rivers which empty into the Arctic Ocean. The mouths of these rivers, like those of the rivers of northern Canada, are icebound long after the headwaters have thawed in the spring. This often causes floods in the lower portions of their valleys to the north. The streams here, although open for only a few weeks each year, are being used more and more for trade.

The southwestern plateaus and valleys. Much of southwestern Asia is a desert where few people can live and some parts of which have never been explored. The areas which have some rainfall lie mostly along the coast, and there almost all of the rain comes in winter as it does in southern California. As a result farming in most places can be carried on only where irrigation is possible.

SOME RELATED PROBLEMS

1. Why has Asia no such great rivers as the Mississippi and the Amazon?
2. What portion of North America is similar to the great interior basin of Asia?
3. Why are not all the coastal lowlands of Asia useful to man?
4. Why do the southern slopes of the Himalayas get more rainfall than the northern slopes?
5. Why are the interiors of Asia and South America thinly populated while the interiors of North America and Europe have many inhabitants?
6. What cities of Asia lie at about the same distance from the Equator as New York, New Orleans, Los Angeles, Havana, Mexico City, and Colon?
7. Why is there such a great contrast between the temperature of Benares and that of Verkhoyansk? (See graph, Fig. 424.)

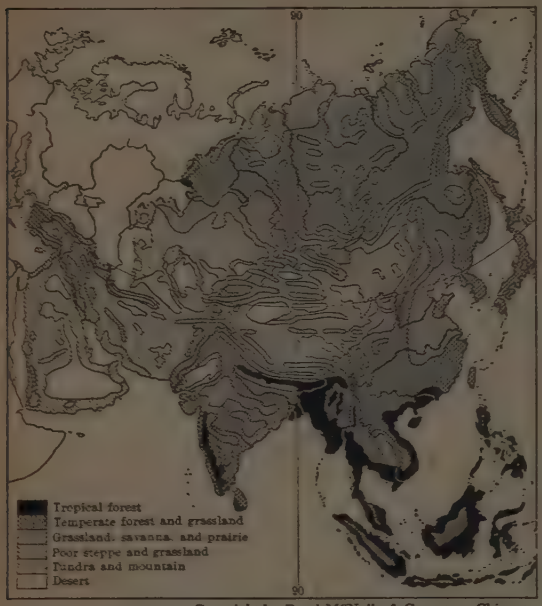

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FIG. 428. **Distribution of natural vegetation in Asia.** Compare this map with the rainfall map (Fig. 426). Where are the tropical forests? From a study of this map, what occupation would you expect to find throughout central Asia? Why are there no forests on most of the mountains of Asia?

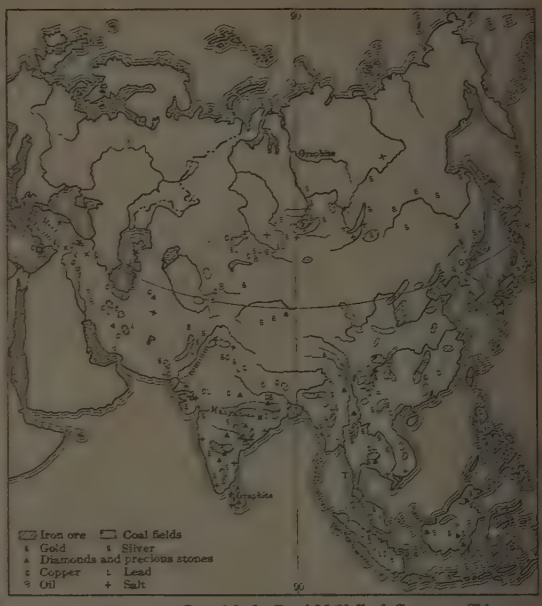

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FIG. 429. **Distribution of mineral resources in Asia.** Most of the world's supply of tin comes from the Malay Peninsula. Find out through what port it is exported. Study carefully and compare this map with the population map (Fig. 425). Do the areas of densest population have many minerals?

COUNTRIES OF THE NORTHERN PLAINS AND UPLANDS

177. WHAT THE MAPS, TABLES, AND GRAPHS SHOW

Problems:

1. Why is the Trans-Siberian Railway an important factor in the development of northern Asia? (*a*) Trace the route from Leningrad eastward through or near the following places: Omsk, Tomsk, Irkutsk, Chita, and Vladivostok. (*b*) Why does the road divide at Chita? (*c*) What part of the road runs over plains? what part over rugged land? (*d*) What conditions prevent easy transportation southward from Siberia? Why can the rivers of northern Siberia be used only a few months each year? (*e*) What type of vegetation (Fig. 428) borders this railroad throughout most of its course? What does this suggest as to the chief products of the country? (*f*) Compare Canada and Siberia as to railroad development. What does this suggest as to one of Siberia's great needs? (*g*) From the population map of Asia (Fig. 425) find out the relation of this railroad to the distribution of population in Siberia. Explain the great variation in temperature at Verkhoyansk (Fig. 424).
2. Why is the area around Lake Aral thinly populated? (*a*) What does the population map (Fig. 425) show as to the distribution and density of population? (*b*) Compare the elevation and relief with the surrounding lands. (*c*) Why are there more people in the vicinity of two rivers? (*d*) Study the physical and rainfall maps and see if you can account for the rainfall conditions. (*e*) Does the vegetation map suggest how most of the people must make a living?
3. Why can northern Siberia never be used for farming? What industry might perhaps be developed in the Arctic tundras and grasslands of Siberia and Canada?
4. Compare the Amur River with the St. Lawrence as to its latitude, length, and its possible usefulness for transportation purposes.

178. SIBERIA: AN EMPIRE AWAITING DEVELOPMENT

THE LESSON FORECAST

1. How the country is related to Russia.
2. The natural resources of the region.
3. Why there are no large cities.
4. Reasons for the location of Vladivostok.
5. Why Irkutsk is an important city.
6. Problems in the development of Siberia.

Location and natural vegetation. Siberia includes most of the eastern portion of the Union of Socialistic Soviet Republics, of which Russia is the political center. This great country extends from the Ural Mountains to the Pacific. As we have already seen, it contains vast forests, the resources of which are little used except to provide lumber for home use. This immense forested region is the world's greatest source of furs.

The development of the country. In central southern Siberia there is much good land that is being used for the growing of grain and the raising of cattle, as are similar regions in North America. The greatest development is found along the line of the Trans-Siberian Railway, built many years ago from western Russia to Vladivostok on the Pacific. In the higher eastern regions are rich deposits of minerals, such as gold, silver, coal, copper, zinc, lead, and iron (Fig. 429). Since the World War practically only the silver and gold mines have been worked.

Reasons for the slow development of Siberia. Siberia is a country of great possibilities. Unfortunately it is thinly populated, and its people are poorly educated and have little to work with. Since the World War the government has been weak and the people have lacked good leaders. Siberia is really like a huge, sleeping giant. When this country finally wakes up, its strength will be great.

The cities of Siberia. In all the vast area of Siberia there is no city so large as Omaha. This is easily explained by the fact that the industries are such as require people to live in small groups. Vladivostok, at the eastern end of the Trans-Siberian Railway, was intended for an important port, the only port Russia possessed on a great ocean. This port would be icebound part of the year if it were not for the huge ice breakers which are kept at work. Because the country has an unsettled government, Vladivostok is not growing. Most of the business of the city is done by Chinese merchants.

Irkutsk is the largest city in central Siberia. It owes its growth to its location on a river and also on the railroad where the line begins to circle the south end of Lake Baikal. This old city, located upon an early east-and-west trade route, has been an important trading center for hundreds of years.

Tomsk and Omsk, because of good rail and water connections, are both distributing centers for the country around them.

Problems of the people. The development of Siberia depends on educating the people to make better use of their vast resources. More railroads must be built, improved methods of farming introduced, and manufacturing encouraged. These changes cannot be brought about until there is a government to which the people can be loyal and which will assist in upbuilding the country.

179. RUSSIAN TURKESTAN: A CORRIDOR FROM EUROPE TO ASIA

THE LESSON FORECAST

1. The location of this region.
2. Why this is largely a grazing region.
3. Why this may be considered a gateway between the East and the West.
4. Where grains and fruits are grown.
5. Why transportation by caravan is decreasing.
6. The chief article of manufacture.
7. What the problems of the region are.

The character of the region and its people. As one goes southwest from Siberia, the country becomes very dry, and just east of

FIG. 430. **A Turcoman of Turkestan.** This man lives in the steppe region near the Amu Darya or Oxus River (Fig. 423). What does his clothing tell you about the climate? Why do you think he is riding a donkey? Do you know in what kind of country a donkey is better than a horse?

the Caspian Sea lies Russian Turkestan (Fig. 430), one of the great desert areas of Asia. This is a region of few streams, all of which flow into seas or lakes that have no outlet. In this vast area most of the inhabitants live by following their herds from pasture to pasture. The herds consist mostly of horses, sheep, and goats. The goats furnish milk used in various ways as a food, while the skins are an important article for trade. Often these people increase their scanty means of making a living by plundering caravans and taking whatever riches they can secure. Caravans have always been obliged to protect themselves from these robbers as best they could while passing through this region which has long been one of the important routes of travel between Europe and Asia.

In the oases of the desert and in the larger river valleys farming is carried on by means of irrigation (Fig. 431). Here grains and fruits are raised, and cotton and silk produced.

The Soviet Republics of the region. The several self-governing republics of this part of Asia are really dependencies of Russia and belong to the union of which the Russian Soviet Republic is the head. These are small countries, their combined area being somewhat greater than that of Texas. They are important because of their location along a great caravan route between Europe and China and India, the lands of silk and tea. They are interesting because of the different ways in which the people make a living. Some of the people such as the Kirghiz (Fig. 432) are strictly nomads. Others living in the irrigated regions practice intensive farming. These countries are now joined to Europe by railroad, and trade is more important and easily carried on than it once was.

They are a part of the great region in Asia long famous for the beautiful rugs made in the homes. This is one way in which the wool from the sheep is marketed.

Cities of Russian Turkestan. The cities in Turkestan are all small, yet many of them are very old. The streets are usually narrow and, as in New Mexico and Arizona, many of the houses are made of sun-dried bricks instead of the kind of bricks we know. The use of such bricks in building shows that the country is dry, for unbaked clay bricks would be easily washed away by a rain.

Bukhara, an ancient trading city, stands at a point where caravan routes to China, Persia, and India meet. One of the best-known cities of this region, Bukhara is fortunate in being situated where water can be obtained from a mountain stream.

Other important cities are Tashkent and Samarkand. They lie in an irrigated section and both are trading centers. Tashkent is connected with Europe by two railroad lines, one running to the Caspian Sea, the other a branch of the Trans-Siberian Railway. Samarkand lies on the Caspian Sea route.

FIG. 431. Irrigated rice fields in Turkestan. What is the natural vegetation in this part of Asia? (Fig. 428.) Do you think this region could support many people unless irrigation were practiced? What rivers here might supply the water for irrigation?

Can you explain why this large field has been divided into a number of small sections? Do you think it would be easy to distribute the water for irrigation here? Explain your answer. Do you see any houses in the picture? Can you think of any reasons why houses might not be built on land that can be irrigated easily?

FIG. 432. Asiatic camels and their masters. Here you see that part of Turkestan north of the Caspian Sea, called the Kirghiz Steppe. (Fig. 423). Look carefully at the faces of the men. To what race do you think they belong?

In what season do you think the picture was taken? Look at the January temperature map (Fig. 497) and determine how cold it gets in this region. What do the men wear as protection against the cold winds? Do you know why these camels have more hair than the camels of North Africa? Find out why there is no snow on the ground (Fig. 433).

Problems of the people. Such a dry region as this cannot support a dense population. If irrigation can be increased, trade routes better protected, and industries developed, more people will be able to make a living. In spite of its backward state, this historic section is important because of its fine location for trade.

SOME RELATED PROBLEMS

1. In what ways is Siberia similar to Canada?
2. Why was it easy for Russia to extend its influence into Turkestan and Siberia?
3. Why has trade between China and Siberia always been difficult?
4. Why are the great rivers of Siberia of little value for transportation?
5. Why are the waters of Lake Aral salty?
6. How are the fortunes of the people who live along the lower course of the Oxus River dependent upon the people who live near its headwaters?
7. Study Figs. 255 and 424. Compare Dawson, and Verkhoyansk as to latitude, distance from the sea, and seasonal distribution of rainfall and temperature.

COUNTRIES OF THE DRY SOUTHWESTERN PLATEAU REGION

180. WHAT THE MAPS, TABLES, AND GRAPHS SHOW

Problems:

1. What great contrasts in seasonal distribution of temperature and rainfall do you find in the Near East? (*a*) At what time of the year does most of the rain come in southwestern Asia? (Fig. 433.) (*b*) Compare this with the time of year when the rainfall is heaviest in India (Fig. 445). (*c*) Give two reasons for the great differences in temperature at Bushire and Tehran (Fig. 433). (*d*) Although Karachi is a greater distance from the Equator than is Bangalore, yet it has a higher average temperature. Why? (Fig. 445.) (*e*) Account for the high rainfall and low temperature at Darjeeling. (*f*) Why does it get both colder and hotter at Bagdad than at Bushire? (*g*) Give two reasons why irrigation is necessary in southwestern Asia (Fig. 426).
2. Why have Syria and Palestine long been a natural highway for travel and trade? (*a*) Trace the shortest practical land route from Bagdad to Cairo (Fig. 434). Why does not this route follow a straight line? (*b*) In the same way trace the shortest practical land route from Istanbul to Cairo.
3. Why are camels used extensively for travel and for transportation in this part of the world? (*a*) In what regions are camels especially valuable for use as work animals?
4. What do the rainfall and vegetation maps and climatic graphs show as to the probable activities of man in this region? (*a*) Why would it not be profitable to build many railroads in the southwestern part of Asia?
5. Why are salt lakes and seas found in southwestern Asia? (*a*) What large rivers flow into the Caspian Sea? How does the level of this sea compare with sea level? (*b*) Why does not the Caspian Sea fill up and overflow? (*c*) Locate two or three other bodies of water that are below sea level. Why are their waters salt?

181. ANATOLIA: THE REPUBLIC OF TURKEY

THE LESSON FORECAST

1. How the inhabitants of Anatolia make their living.
2. Why Anatolia has always been a gateway between the East and the West.
3. Why in recent years industries in Turkey have declined.
4. The location and importance of the leading cities.
5. The chief problems of the region.

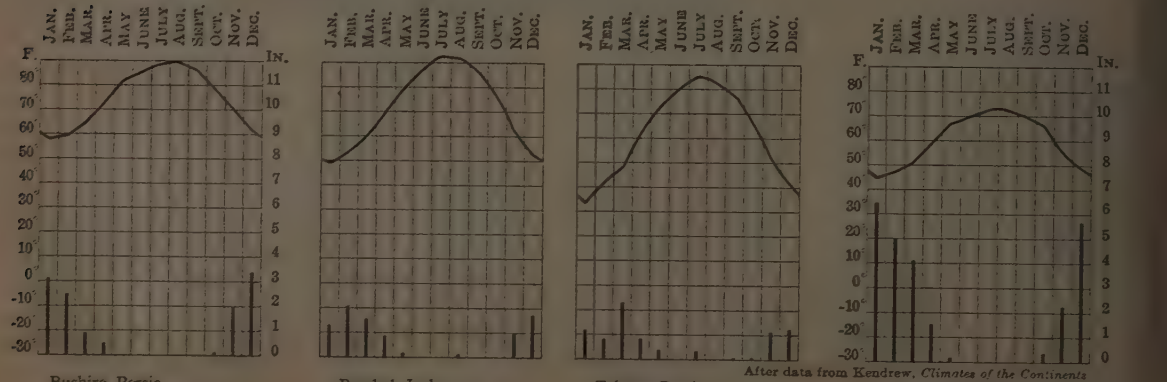

JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT. OCT. NOV. DEC.
F.
IN.
80 70 60 50 40 30 20 10 0 -10 -20 -30
11 10 9 8 7 6 5 4 3 2 1 0
Bushire, Persia
Alt. 14 ft. Temp. 74.4°
Rainfall 12.5 in.
Bagdad, Irak
Alt. 229 ft. Temp. 71.3°
Rainfall 9.0 in.
Tehran, Persia
Alt. 4,002 ft. Temp. 61.7°
Rainfall 8.9 in.
Jerusalem, Palestine
Alt. 2,581 ft. Temp. 67°
Rainfall 25.8 in.
After data from Kendrew, *Climates of the Continents*

FIG. 433. **Average annual temperature and rainfall for four cities of southwestern Asia**

FIG. 434. A Map of the Area Known as the Near East

Courtesy The Six-Wheel Company, Philadelphia

FIG. 435. **An American motor bus in Asiatic Turkey.** Study the picture. Do you see any vegetation in it? Find out how much rain falls in the interior of Anatolia (Fig. 426).

What advantage has motor transportation over animal transport in dry regions? Notice that the bus has two sets of rear wheels. Can you tell how this arrangement helps in traveling through sand?

The men mounted on camels are Turkish policemen. Can you tell why police are needed to patrol and guard the desert regions?

The nature of the region and activities of its people. The peninsula of Anatolia, or Asiatic Turkey, lies almost wholly between the Black Sea and the Mediterranean, and is usually known as Asia Minor. It contains the largest part of the Republic of Turkey, which, as we have learned, also includes some territory in Europe. Anatolia is mostly a plateau with a dry climate, where the inhabitants make a living chiefly by raising herds of goats and sheep. The goats are mainly the long-haired Angora goats, and their hair, known as mohair, is one of the leading exports. In the western part of Anatolia is a narrow plain cut by river valleys which afford excellent trade and travel routes into the interior. This section is well watered during winter, and here are grown such fruits as figs, grapes, and olives. Tobacco, which is raised in large quantities, is the most valuable export of the region.

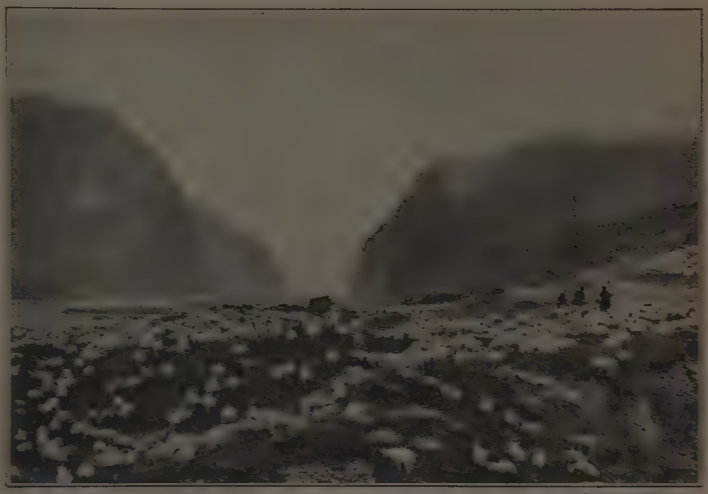
Anatolia, a corridor to Europe. The coastal area in the north is separated from Europe only by the narrow strait of the Bosporus, and the river valleys furnish easy routes for travel. Anatolia has therefore long been a great overland route for trade and travel between Europe and Asia (Fig. 435).

The undeveloped resources of the country. Although the region is rich in minerals, there is little mining. Except for rugs and carpets made in the homes of the people, there is but little manufacturing. Some weaving, however, is carried on in small factories.

Turkey was long held back by its autocratic government. But the new government is increasing the number of schools, introducing modern machinery, and developing the natural resources of the country. The agricultural products raised for both home use and export are increasing each year. The Turks are also rapidly learning new methods of manufacturing and as a result the country may be expected to become more and more prosperous, and important for its commerce.

The leading cities of Anatolia. The capital, Ankara (Angora), is a small city built on the plateau and connected by a railroad with Istanbul and Izmir (Smyrna). Izmir, the largest city, beautifully located at the head of the Gulf of Smyrna, has nearly 100,000 inhabitants. It is an old trading city and the chief port for the shipment of the fruits and tobacco grown near by and also for the shipment of other products from the plateau.

Bursa (Brusa) ranks second in commerce to Izmir and is also a health resort. It manufactures some silk, for silk production is increasing in this section. Trabzon (Trebizond) is the chief port on the Black Sea but its harbor is a poor one, and it is not so important as it was before the days of railroads.



Ewing Galloway

Fig. 436. A scene in the Caucasus Mountains. This is a valley near the old caravan route through Dariel Pass to Tiflis (Fig. 434). Notice the poles at the right. What are they? Are you surprised to see them here?

Could there be a great variety of occupations in this highland region? There is excellent pasturage here, and sheep raising is the chief industry. Do you think the shepherds can keep their flocks long in the same place? Explain your answer. Where else have you found sheep raising the chief occupation in a highland area? Why can sheep be raised where cattle do not thrive?

Problems of the people. Today Turkey is a republic, in its plan somewhat like our own. One of the greatest problems facing this new Turkey is to educate the people who for centuries have had no voice in carrying on their government. The people are now learning how to aid in selecting government leaders who will all work together for the good of the country. They are also helping in developing the resources and industries of the country. Turkey has had many wars which have kept conditions unsettled and hindered progress. Its future growth therefore depends not only upon securing the loyalty of all the people but also upon keeping on good terms with all the neighboring countries.

182. THE TRANS-CAUCASIAN SOVIET REPUBLICS

THE LESSON FORECAST

1. Location of these countries.
2. Relation of these republics to Russia.
3. Why this region has long been a favorite route from Asia to Europe.
4. The disadvantages of Armenia.
5. The leading cities of these republics and their chief industries.
6. The problems facing these republics.

The nature of the region. South of the Caucasus Mountains and lying between the Caspian Sea and the Black Sea is an area about the size of Nebraska. This area is divided into three small republics, Georgia, Azerbaijan, and Armenia. Although each of these small countries is said to be independent, they are all so closely related to the Soviet Republic of Russia that they all three are practically a part of that great country.

How the people make their living. Most of this Trans-Caucasian region is mountainous, and grazing and agriculture are the chief occupations of the people (Fig. 436). Grain is raised extensively, but the farming methods employed are primitive and the crops are usually small.

South of the Caucasus Mountains is a lowland which reaches from the Caspian Sea to the Black Sea. Through this region extend a railroad and pipe lines which transport oil from Baku. This city is the center of one of the richest oil-producing areas in the world.

Another land bridge between Europe and Asia. The lowland of Trans-Caucasia has served as another land bridge over which the people of Asia have long passed back and forth in their many attempts to get a

foothold in Europe. As a result the nations of this lowland are made up of people of many different nationalities who do not get along well together.

In recent years the population of Armenia has increased by nearly half a million people who migrated from, or have left, Turkey for some cause. In a region where at best making a living is a difficult matter, this increase in numbers is a disadvantage instead of an advantage to the country.

Cities of Trans-Caucasia. Baku, the most important city of Trans-Caucasia, in the center of a great oil region, produces oil for export and also manufactures petroleum products. It is a trade center for goods from southern Asia. Baku is connected by railroad with its port, Batum, on the Black Sea at the western end of the lowland.

Tiflis is the largest city in Trans-Caucasia. Its growth is due to its position at the junction of the railway and a caravan route running north through the Caucasus. It is a market for products from the southern plateau and manufactures some textiles, carpets, and leather goods.

Problems of the people. One of the greatest problems these three small Trans-Caucasian republics are facing is that of maintaining strong governments. They must all work together and withstand stronger nations interested in the trade possibilities of this important region. The people are increasing the number of their schools, but their methods of making a living are primitive, and they are restless and discontented with conditions. A strong union of these countries is therefore necessary.

183. HOLY LAND OF THE CHRISTIANS, JEWS, AND MOHAMMEDANS

THE LESSON FORECAST

1. Why this region is sacred to many people.
2. Why so little of the interior of Arabia has been explored.
3. How the people of Syria and Palestine make their living.
4. How these countries are governed today.
5. How the people of Arabia make a living.
6. Why people are interested in Syria and Palestine.
7. How the cities of the region depend on the railroads.
8. Reasons for the location and importance of the leading cities.
9. Why the city of Aden is as important to the British as is Gibraltar.
10. Problems the people of this region are facing.

Birthplace of three religions. Palestine is the original home of the Jews and was the birthplace of Christ and the Christian religion. It is thus a Holy Land to all Jews and Christians. The city of Mecca in Arabia was the birthplace of Mohammed and is therefore the Holy City for the millions of Mohammedans of Asia and Africa. Palestine, Arabia, and Syria extend south from Anatolia to the Arabian Sea and occupy the dry southwestern region of Asia. With the exception of Syria and a part of Palestine (Fig. 437), which get some rain in winter, this great region is a desert. Indeed, because the country is so dry and consequently almost uninhabitable and of little use to man, there are large parts of Arabia which have not yet even been explored.

Making a living in Palestine and Syria. Syria and Palestine consist almost entirely of a high, dry plateau which is wholly grazing country although there are some forests found in the north. In these two countries the people still follow their flocks and herds from pasture to pasture and live much as did the people of ancient times whose history is recorded in the Bible.

Both Palestine and Syria have a narrow but fertile coastal plain lying between the high plateau and the Mediterranean. Here in this plain are most of the leading cities and ports, and here are produced tobacco, cotton, silk, and olives and other fruits.

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FIG. 437. **A view in Palestine.** Study the foreground of the picture. Notice the rough surface and the Arab plowing with his oxen. Do you think he will have a good crop? What is the name of the pole across the necks of the oxen?

Much of the surface of Palestine is as rocky and rugged and as hard to cultivate as the slopes shown here. Where in the United States can such regions be found? Do you know at what season of the year there is the most rainfall here? (Fig. 426.) Do you think it would be easy to irrigate this land?

The valley of the Jordan and the Dead Sea. East of the plateau in Palestine is the deep-set, steep-sided valley in which lie the Dead Sea and the Sea of Galilee, connected by the Jordan River. The surface of the Dead Sea is nearly a quarter of a mile below the level of the Mediterranean. The Dead Sea, therefore, has no outlet. The rivers which empty into it flow down to the lowest spot just as do the rivers in Utah to Great Salt Lake. The Dead Sea is even more salty if possible than that lake. But the waters of the Sea of Galilee, which has an outlet, are fresh, and fish are found there.

In this lowland the soil has proved productive wherever irrigation is practiced, and subtropical crops are grown. The rapid streams are now being used to furnish electric power and can, of course, furnish much more power if needed. The waters of the Dead Sea contain many valuable salts. These resources may some day be developed to the great advantage of the entire region.

Two crossroads countries. People are interested in Palestine and Syria, not so much because of their exports, but because they are ancient countries containing many places of great interest to all students of history. Much of their early history is found in the Bible. In addition this region has long been important because it was a part of a great land route from Asia Minor to Egypt and from the Mediterranean to the former great cities of Mesopotamia. The people of these countries have always been open to sudden attack by the Arabs from the surrounding country.

Formerly these two countries were part of the Ottoman Empire, but since the World War, Palestine has been under the mandate of the British, and Syria under that of the French. Those nations are endeavoring to build up these ancient countries and to make them capable of supporting more people. A determined effort is now being made to induce Jews to return to Palestine to make it once more the great Jewish country of the world.

Arabia: a part of the mid-world desert. The sections of Arabia bordering the sea, as may be seen by the map, are divided into many small states. Here some wheat, barley, and fruits are grown under irrigation, and small quantities of coffee and dates are produced and exported. Arabia as a whole, however, has few inhabitants and few natural resources. The Arabs are mostly nomads (Fig. 438) who make a living by raising horses, sheep, goats, and camels. In this dry desert region horses and camels are needed

FIG. 438. **An Arab encampment in northwestern Arabia.** What do we call people who live in tents and move from one place to another with their flocks and herds?

In this picture we have a view near Aqaba, Trans-Jordan (Fig. 434). Notice the nature of the surface. Do you think the Arabs will remain encamped here long? Can you explain why Arabia is almost entirely a desert region? (Figs. 424, 426, and 428.)

What kinds of trees are the ones seen growing here? Find out why they thrive in such a dry region. What salt sea lies in this vicinity?

FIG. 439. **Camels in an Arabian village.** In this picture we may see part of a camel train at a small port on the Red Sea directly west of Medina (Fig. 434).

This port furnishes an outlet for much of Medina's trade. Consult your map and using your scale of miles find out how far it is from Medina to the Red Sea. Learn what other outlets Medina finds for its trade. What is the advantage in using camels for transportation in this region?

What does this picture tell you about the building materials used in this part of Arabia?

for the caravan trade. Sheep and goats furnish food and also skins for trade.

The leading cities of the region. The chief cities of Syria and Palestine are located on the railroad which extends from Izmir in Anatolia southward to Medina (Fig. 439) in Arabia. At Alep (Aleppo) (Fig. 440) in Syria this railroad is joined by one from the Persian Gulf, thus making that city a significant trade center. Alep has some manufactures of textiles.

Damas (Damascus), the largest city of Syria, is very old and lies on the main caravan route from the Mediterranean to Persia. It is still famous for its work in steel and other metals. This work is done by hand, so that each sword or article of brass or gold is just a bit different from any other made by the same workman. Since caravan routes have largely given way to railroads, Damas has lost some trade. The city depends in part for its trade upon the seaport of Beyrouth (Beirut), with which it is connected by a branch railroad. Beyrouth has the best harbor along the coast and besides being a busy port is a center for tourists visiting Syria and the Holy Land (Fig. 434).

FIG. 440. **A street scene in Alep (Aleppo), Syria.** Find out why Alep is an important trading center (Fig. 434). What port is near it? Alep lies on the divide between the Mediterranean Sea and the Mesopotamian Valley. Is this location an advantage? What city in the Sacramento-San Joaquin Valley in the United States lies in about the same latitude as Alep? (Consult a globe.)

Note the building in the background of the picture. This is a mosque, as the Mohammedan place of worship is called. See if you can find out for what purpose the balcony around the tower is used.

Jerusalem, the ancient city of the Jews, lies inland on the plateau and is connected by rail with the little port of Jaffa. In the city live many Mohammedans, Armenians, Jews, and Christians, each group occupying a special part of the city. The surrounding region is so dry that for water the people must depend in part upon that stored in cisterns during the rainy season. Close to Jerusalem lies the little town of Bethlehem, the birthplace of the Christ. This village is fortunate in being located where water can be secured for irrigation, and is surrounded by grain fields, olive orchards, and vineyards.

Mecca, the chief city of Hejaz, Arabia, is the birthplace of Mohammed. It lies inland in such a dry region that its water supply has to be brought from a great distance. Every good Mohammedan hopes to make at least one pilgrimage to Mecca during his lifetime. Often this means a long, weary journey on foot during which the traveler may meet many dangers. Yet all devout Mohammedans endure the hardships with joy. Caring for the pilgrims who come each year is one way in which the people of Mecca make their living.

Aden, a port at the southern end of the Red Sea, is built around a fortification which guards the eastern entrance to the great trade route through the Suez Canal just as Gibraltar guards its western entrance (Figs. 441 and 442). Both Gibraltar and Aden belong to Great Britain. The city of Aden is built in the hollow of an old volcanic crater and is in a region that is very hot all the year round. Just beyond it stretches the great desert, and for this reason all supplies must be imported.

Problems of the people. The great problem of the French and British is to help the people of Syria and Palestine make these countries more productive. This must be done either by increasing agricultural products by means of irrigation and the use of more progressive methods, or by finding new natural resources from which articles for trade can be produced. Money to build roads, irrigation works, and other needed improvements can be secured only through the increase of surplus products. The salts from the Dead Sea, if they can be mined and carried to the ports by electric power, may some day prove to be an important source of wealth.

If the people, who now live in constant fear of losing the little they have, can be protected from the raids of their nomadic

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FIG. 442. **The harbor at Aden.** Locate the city of Aden (Figs. 427 and 434). Upon what great water highway does it lie? Can you explain why the British think it important to hold Aden? Find out how far it is from Aden to Bombay (Fig. 434). How far is it from Colon, Canal Zone, to New York City? (Fig. 509.)

The city lies on the peninsula of Aden which is connected with the mainland by a neck of flat, sandy land. Study the picture closely. How do you think the tower on the hill is used?

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FIG. 441. **A water carrier of Aden.** There are few wells in Aden. Most of the water used in the city has to be brought from a distance, either by pipes or by water cart. What does Fig. 426 tell you about the rainfall and temperature at Aden?

neighbors, they will be more inclined to do better work. They will then be able to secure a better living and begin to acquire property.

Today in this region, especially in Arabia, many small groups are striving with each other to make a living. If all of these people could only be combined into a single nation and learn to work together for the development and good of the country, many much needed improvements could be brought about. It is always difficult, however, to get groups of people who have always considered themselves enemies to work together. It may be, therefore, a great many years before the few valuable resources of Arabia are used as they might be.

184. A LAND OF ANCIENT EMPIRES

THE LESSON FORECAST

1. What is meant by Mesopotamia.
2. The civilization found here in ancient times.
3. How the people of Irak and Persia make a living.
4. Why this region has long furnished a route for caravan trade.
5. Why three great European nations have long coveted this region.
6. Why it is hard to make a living in Afghanistan.
7. Why Afghanistan is a buffer country.
8. What the Afghans produce for maintenance and for trade.
9. Reasons for the importance of Bagdad and Tehran.
10. Some problems of the people.

The splendor of the ancient kingdoms of Mesopotamia. Thousands of years ago the rich alluvial plains in the Tigris-Euphrates Valley were at different times occupied by some of the greatest of the ancient nations.

These nations were rich and powerful. The people built splendid buildings, developed irrigation works, and led in engineering and art. Today in this valley is found the kingdom of Irak, better known perhaps as Mesopotamia. It is a small nation under the control of the British Empire. We know about the ancient splendor of this region

only through the accounts of historians and from the ruins that are now being uncovered by excavations. The history of Babylon, one of these ancient nations, is in many ways like that of Egypt. Both were situated in river valleys and once both were powerful kingdoms. All the ancient kingdoms which occupied the Tigris-Euphrates Valley have long since disappeared, but in the great valley of the Nile River, Egypt still remains.

Persia: a very old nation. East of Irak is Persia, another ancient nation that was once rich and powerful. Persia occupies the high, dry plateau of Iran, which is a part of the great desert of southwestern Asia (Fig. 434). There are some forests found here, but most of the inhabitants of Persia are engaged either in agriculture or else in the raising of sheep and goats.

The resources of Irak and Persia. The favored spots in these two countries are those areas where irrigation is possible. Fortunately the rains come during the cooler months so that the water may be stored and be ready for use in the warmer season. In Irak, where the soil is extremely rich, if irrigation were as well developed as it was in ancient days, excellent crops could be grown and a large number of people could easily make a living.

With the exception of oil, which is very important, the countries of Persia and Irak have few products for export. Although silk goods and rugs are woven and leather products are made, these articles are mostly for home use. Some dates and other fruits and fine, hand-woven rugs (Fig. 443) are exported, but on the whole most of the products of these countries are not sufficient to supply even the home needs.

Around the head of the Persian Gulf in both Irak and Persia are rich deposits of oil. Oil is also found in quantities in northern Irak. Many nations, especially the British,

FIG. 443. **Rug weavers of Persia.** This is a picture of a rug being woven in Tabriz, northwestern Persia (Fig. 434). What is the name of the frame at which these boys are working? Persia has long been famous for its beautiful rugs. Find out where the raw material for these rugs is secured.

are much interested in the development of these valuable resources.

The struggle of the nations for influence in this region. For ages these two countries have furnished a travel route. Over this route great caravans journeyed back and forth between the Near East, as the region about the eastern Mediterranean is called, and the Far East of India and China. Today there are still fifteen caravan routes crossing the country of Persia.

Before the World War, Germany, the British Empire, and Russia were all striving for control of the transportation routes to the Persian Gulf. Germany wanted a direct railroad from the Persian Gulf to Berlin through a country which it could control. Russia wanted to secure a port open all the year round so as to give a better outlet for its commerce. Owing to the results of the war, the British Empire is the only nation with any great influence in these regions. Today it is endeavoring to help develop and

market the valuable resources and improve the railroads of these countries.

Afghanistan: the home of a warlike people. Lying east of Persia between India and the great region to the north of the Hindu Kush Mountains is Afghanistan. It is a dry, rocky country, yet there are many fertile plains and valleys. The people find it difficult to make a living and like the Balkan peoples are constantly in trouble with their neighbors. Some of them are robbers who plunder caravans or even go on raids into the richer regions of surrounding countries.

Afghanistan is a buffer country through which passes much of the trade between northern and southern Asia. In the northeast is the Khyber Pass, the most important pass by which people can cross the great mountain wall. The Soviet and British governments must maintain forces near this pass in order to protect caravans and other expeditions. The Khyber Pass (Fig. 434) because of the height and length of the great mountain wall on both sides of it, and because of its importance as a trade route, is one of the most famous mountain passes in the world.

Afghanistan, like its neighbors, is primarily a grazing country with some agriculture in favorable spots where small rivers and wells furnish water for irrigation. Owing to the times of the year when the rain comes, two crops may be easily grown in some sections. Wheat, barley, peas, and beans are grown in the cooler season, and rice, millet, and maize in the warmer season. Most of the products are used to supply home needs and almost nothing is raised for export.

The grazing carried on is largely devoted to the raising of the peculiar fat-tailed sheep. These sheep furnish not only wool and meat but also fat which is obtained from their tails, and is used as a substitute for butter by the people of Afghanistan. Wool and skins form the chief exports of the country.

The leading cities of the region. Bagdad, situated on the Tigris River, is not only the largest city of Irak but also the largest in the southwestern part of Asia. The city is a center of caravan trade and travel, and has rail and boat connections with the Persian Gulf (Fig. 444). Before the opening of the Suez Canal the trade carried on by Bagdad was much greater than it has been since it has had to meet this competition.

Basra, at the head of the Persian Gulf, is the port of Bagdad with which it has connection by a line of river steamers. Here all exports must be transferred from boat or train to ocean steamer. It is a center for the export of dates from the oases.

Mosul, situated in northern Irak, lies close to the site once occupied by the famous city of ancient Nineveh (Fig. 434). The city of Mosul is a flourishing trade center, although it too has suffered from the opening of the Suez Canal. It is also one of the largest of the oil cities located in this section.

Tehran, the most important city of Persia, although on a high, dry plateau (Fig. 433), is surrounded by a rich irrigated region. It lies on one of the important caravan trade routes in Persia, but has no rail connections. It is planned, however, to connect the city by rail with a port on the Caspian Sea and also with one on the Persian Gulf. Other large cities of Persia are Tabriz, Isfahan, and Meshed, but Tehran is the most important of them all, partly perhaps because it is the capital of the country, and partly because of its location (Fig. 434).

The problems of the people. Persia and Afghanistan are both independent countries, but their governments are weak and unable to develop the resources or win the confidence of other nations wanting to do business with them. A strong government is especially needed in Persia with its rich deposits of oil which other nations are anxious to see developed.

Ewing Galloway

FIG. 444. **The river front at Bagdad, Irak.** Bagdad, on the Tigris River, is an old, old city, the largest in Irak (Figs. 427 and 434). What city serves as its port? Using the scale of miles, find out how far Bagdad is from its port. The melons have been brought down the river in these queer, tublike boats known as koofahs. Learn how koofahs are made; how propelled.

Railroads and roads must be built, and more land must be brought under irrigation. The people need to be taught to use better methods not only in farming but in other industries. Such extensive improvements, of course, cannot be undertaken without money, and these countries are all poor. Other nations might be willing under certain circumstances to loan money for needed improvements. But they naturally hesitate to do so where the government of a country is weak and the people are restless and discontented.

Under the leadership of the British, the development of the natural resources of Irak probably can be brought about much more quickly than can the development of the resources in Afghanistan and in Persia. And under strong, efficient leadership this backward, unproductive region may once again become rich and prosperous as it was thousands of years ago.

SOME RELATED PROBLEMS

1. Why may Anatolia be considered part of a bridge from Europe to Asia?
2. Why are there so many different races of people in Asia Minor?
3. What part of our country do Syria, Mesopotamia, and Anatolia resemble most in climate? Consult temperature and rainfall graphs and compare rainfall maps. (Figs. 81, 209, 225, and 426.)
4. Why do the English desire to hold such a barren region as that about Aden?
5. Why are the old monuments of Egypt better preserved than those of Mesopotamia?
6. Why do Bushire and Tehran differ so much in temperature and rainfall?
7. Why is Afghanistan a backward country?
8. Why throughout much of this region is irrigation necessary for successful farming?
9. Why is transportation carried on largely by land rather than by water?
10. Why would a ship canal connecting the Black Sea with the Caspian Sea be of little value for trade?

COUNTRIES OF THE WARM MONSOONS

185. WHAT THE MAPS, TABLES, AND GRAPHS SHOW

Problems:

1. Why does India as seen in Fig. 434 appear smaller than Texas as seen in Fig. 144? (*a*) Consult the Appendix (pp. 431, 434) for the exact area of India and Texas. (*b*) How does the distance from Calcutta to Delhi compare with the distance from Houston to Fort Worth? Why is each distance shown as one and five-eighths inches on the maps? (*c*) Find the approximate area in square miles of the quadrangle inclosed by the 30th and 40th parallels and the 60th and 70th meridians (Fig. 434). (*d*) Find also the approximate area of the quadrangle inclosed by the 30th and 40th parallels and the 80th and 90th meridians (Fig. 144). (*e*) How do the areas in (*c*) and (*d*) compare? (*f*) How can a study of the network of parallels and meridians help in comparing two areas?
2. What advantage as to trade with Europe has Bombay over other large cities of India? (*a*) Trace the great water route by which trade may be carried on from Bombay to Europe. (*b*) How much farther is it from Aden to Calcutta than it is from Aden to Bombay?
3. Why is irrigation necessary in much of India? (*a*) What does the population map show as to the number of people to be fed? (*b*) What portion of the country gets less than twenty inches of rainfall annually? (*c*) How is the rainfall distributed through the year? (Fig. 445.) (*d*) In what occupation are most of the people engaged? (*e*) Is the transportation of food from one section of the country to other sections easy?
4. Why was it easier in ancient times for Europe to trade with India than with China? (*a*) Trace a route from the eastern Mediterranean to India by way of Syria, Mesopotamia, and the Persian Gulf. (*b*) Trace an overland route to India by way of Khyber Pass. (*c*) What highlands and deserts lie between Europe and China? (*d*) Why was the sea route to China used but little in early days?
5. Why are travel and communication between India and China difficult?

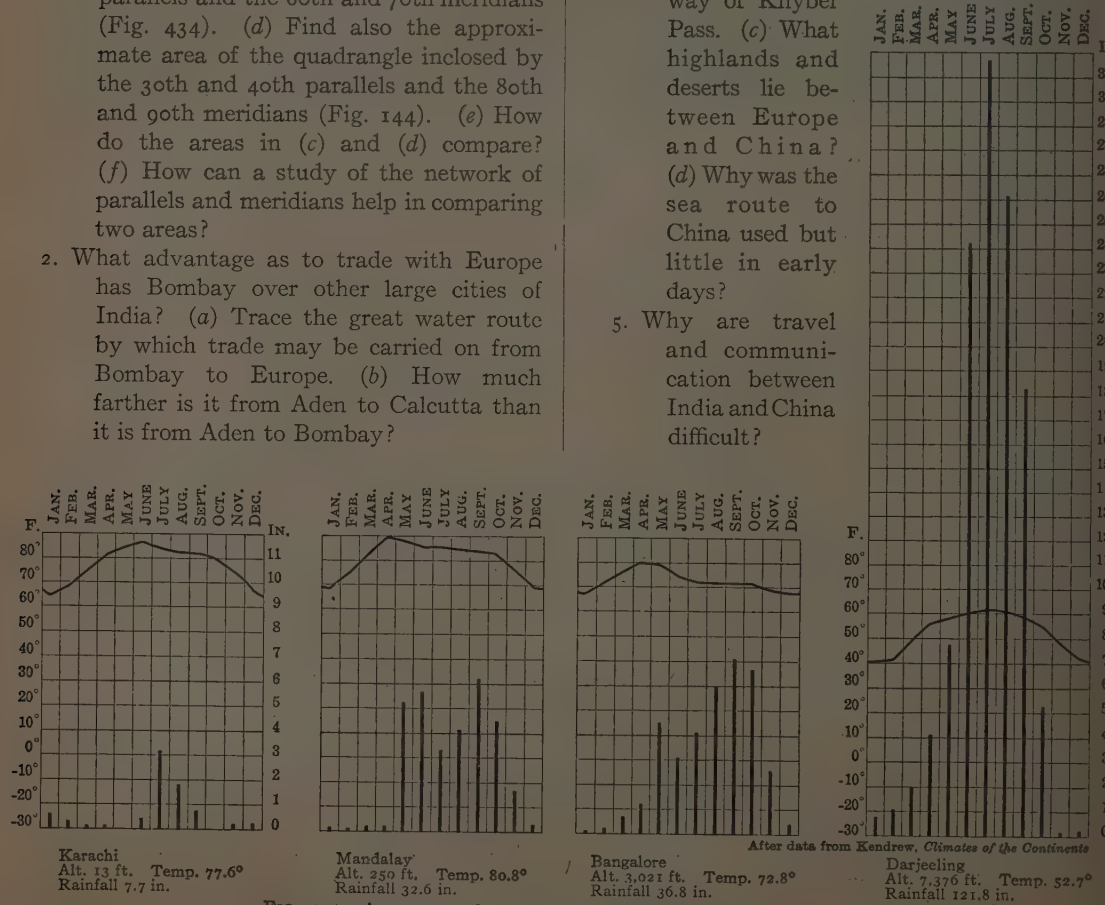


FIG. 445. Average annual temperature and rainfall for four cities of India

FIG. 446. **A river scene in Ceylon.** Locate the island of Ceylon on the map (Fig. 423) and note its physical features. How does the latitude of the island help to explain the vegetation shown in the picture? What conditions do you think help to make tea raising the chief industry of the country? (Fig. 426.)

Notice the buffaloes which have been led to the stream to drink and to wallow in the mud and water. How do you think these buffaloes are made to help the natives? Why do you suppose these natives are living in river boats instead of in houses on land?

186. INDIA: A TROPICAL COUNTRY WITH MANY CONTRASTS

THE LESSON FORECAST

1. The physical features of India.
2. The monsoon winds and rains of India.
3. The plains and deltas of the Indus and Ganges rivers.
4. The Deccan and its location.
5. Occupations in the drier sections of the country.
6. The chief products of India and Burma.
7. Why much of India's trade is with the United Kingdom.
8. The location and importance of the leading cities.
9. Problems in the future development of India.

The larger physical features of India. India is a great peninsula more than half as great in extent as the United States and contains nearly a fifth of the world's population. It is separated from northern Asia by the high, almost impassable mountain wall of the Himalayas, the higher peaks of which are covered with snow and ice the year round. The southern part of this great peninsula nearly reaches the Equator and is bathed on one side by the warm waters of the Arabian Sea and on the other by those of the Bay of Bengal.

The monsoon winds and rains. From May to December the southwest monsoon winds sweep in from the ocean across India bringing heavy rains to a large part of the country. The heaviest rainfall comes to the slopes of the eastern Himalayas and the west coast of Ceylon (Fig. 446), two of the great tea-raising sections of the country. During the rest of the year the monsoon blows from the land toward the ocean. This is the dry and cool season in India, the time of year when people can live comfortably in the lowland regions. Over much of eastern India it is so hot in the hottest part of the wet season that the English residents move to higher and cooler regions.

The plains of the Indus and the Ganges. The heavy rains and the melting snows of the Himalayas furnish water to a number of streams flowing through India down to the ocean. Two of these rivers, the Ganges-Brahmaputra and the Indus, have built great alluvial plains and deltas. Here the soils are rich and productive. Agriculture is carried on everywhere throughout these plains, except in the lower Indus which is too dry for raising crops unless irrigation is practiced. In dry years crops fail and the people suffer from famine.

FIG. 449. **Transporting tea in Ceylon.** The porters are bringing the boxes of tea from the plantation down to the wagons in which they will be hauled to the nearest port. How do the porters carry the boxes?

Try to find out how tea is prepared for market. Can you explain why nearly all large plantations have their own factories where the tea leaves are prepared as soon as they are picked?

Ask your grocer to show you a box of tea before he unwraps it. Note from what country it has come. Why must tea be carefully wrapped before it is sent across the ocean?

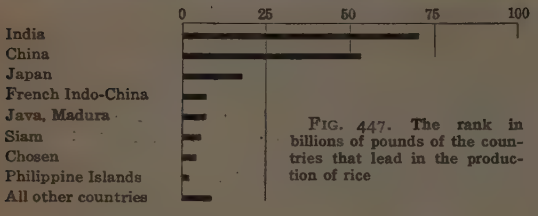


FIG. 447. **The rank in billions of pounds of the countries that lead in the production of rice**

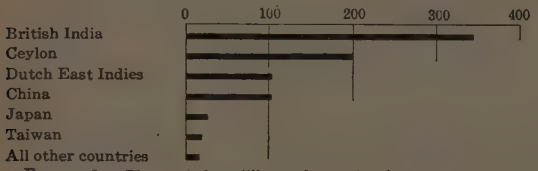


FIG. 448. **The rank in millions of pounds of the countries that lead in the production and exportation of tea**

The Deccan and its products. The river plains of central India separate the highlands and mountains of northern India from the southern section, which is a broad plateau known as the Deccan.

This plateau is higher on the west than on the east, and hence the west side receives more rain in the wet season. The narrow coastal plain on the west is largely devoted to rice. The higher, drier central section is a great cotton-producing region which supplies cotton for local mills and for export.

The leading crops of India. The leading crops of India are rice, cotton, wheat, jute, and tea (Figs. 447 and 448). Rice is grown everywhere in the coastal lowland and also in the delta and the low plains of the Ganges-Brahmaputra. Cotton thrives in the valley of the upper Ganges, in the coast region just southeast of the Indus, and on the Deccan. Wheat is the chief crop in the plains of the upper Indus and Ganges, while jute is grown only in the area around the head of the Bay of Bengal. Jute, because it is used in making grain and sugar bags and as wrappings for cotton bales, is one of India's valuable exports to this country. The marketing of two of our leading crops, therefore, is dependent upon the jute produced in India. This country raises practically all the jute produced in the world.

India and the island of Ceylon are the leading tea-raising countries (Fig. 449). Together they produce about three-fourths of the world's supply. Most of this tea is raised in districts where the rainfall is at least a hundred inches a year, that is, where the rain for a year, if it could be held where it fell, would cover the country more than eight feet deep. The largest tea-raising sections are therefore on the slopes of the mountains in the upper Brahmaputra and on the westerly slopes of Ceylon where the rainfall is the heaviest.

FIG. 450. **Pressing sugar cane in northern India.** This picture was taken near Roorkee about fifty miles north of Meerut (Fig. 434). How does the latitude of Meerut compare with that of the region in the United States where sugar cane is raised? (Fig. 144.)

The finest sugar cane in India is grown in the United Provinces, a region including almost all of the upper valley of the Ganges. Irrigation is practiced here.

Note the primitive method of crushing the sugar cane. Do you think that with such a slow method of obtaining the sugar-cane juice much sugar can be produced for commerce?

In Burma, which is in eastern or Farther India, sugar is raised so extensively in the warm, moist lower plains of the Irrawaddy River that India (Fig. 450) ranks as one of the great sugar-producing countries of the world. Here also are dense tropical forests which yield many kinds of valuable woods. The wood most commonly used is teak, a very hard wood which will last a long time, even if it is exposed to the weather.

The animals raised in India. India also raises great numbers of animals—millions of oxen, sheep, goats, buffaloes, and horses, as well as thousands of camels in the drier western section. These animals are raised only where there is pasture to provide them with food. In India with its vast number of inhabitants grain is too valuable to be fed to animals. The buffaloes are not like our American buffaloes but are more like our cattle. These animals can be domesticated and used for labor as we use horses or oxen (Fig. 450). They are especially valuable in the wet rice lands.

The mineral resources of India. India is rich in minerals, especially coal, gold, and iron. The mining of coal and gold is important, but the iron deposits are practically untouched. Other valuable minerals

FIG. 451. **Cutting precious stones in Ceylon.** Digging for precious stones and preparing them for sale is the business of many people in Ceylon. Valuable precious stones are rare here, but the more common ones are plentiful. Can you explain why the cutting of precious stones is an industry that can be easily carried on in the homes?

are silver, precious stones, and salt. Petroleum is found in Burma, and since petroleum is yearly becoming more important as a fuel, Burma, or any other country with petroleum resources lying near the ocean, is fortunate.

Manufacturing in India. In India manufacturing has been carried on from very ancient times. Weaving, spinning, working in brass, the making of pottery, the cutting of precious stones (Fig. 451), and many other forms of handwork, are still carried on to a certain extent in the homes and villages. Goods are produced either for home use or to

FIG. 452. **Potters at work, Madras, India.** Pottery is made in almost every small village in India. The articles are usually brightly colored. They range in size from small vessels used in cooking, to large jars used for storing grain. From what material is pottery made? Locate Madras on the map (Fig. 434).

sell (Fig. 452). In recent years mills for spinning cottons, woolens, and silks have been established. Textile manufactures of cotton and of burlap from jute employ many people. The preparation of tea and of jute fiber for market is also of great importance.

In spite of the increase in manufacturing, India with its vast numbers of people, many of whom use only cotton for their clothes, must still import vast quantities of manufactured goods. This is true especially of cottons from the United Kingdom.

Why the British are interested in India. It is natural that the largest part of India's trade should be with the home country, because for more than three hundred years the British have had interests in India.

The people of India belong to many races, which in turn are divided into a number of different groups or castes, the members of which will not work together. Thus divided among themselves, it is difficult for the people of India to develop a united nation.

Under the leadership and direction of the British, however, railroads have been built, the amount of land under irrigation has been increased, factories have been established, and commerce has been developed.

Today India ranks as one of the greatest divisions of the British Empire. It furnishes Great Britain with raw materials for its factories and with many other products which add to the comfort of the British people.

The cities of India. Because of the importance of agriculture and grazing in India and because manufacturing is just beginning to be developed, most of the people of India live in and around small villages. The few large cities are all ports where trade and commerce are centered.

The largest city in India is Calcutta, ranking next to London in size among the British cities of the world. The city, like New Orleans, lies far from the sea on a navigable river, and has excellent railway connections with the rich producing areas beyond it (Fig. 434). Calcutta is the chief port of India for both imports and exports.

Bombay, with its excellent harbor, is an important port and is also a great cotton-manufacturing city, for it lies near cotton fields. Owing to its position on the west side of the peninsula of India near the great trade route of the Suez Canal and Red Sea, it is the terminus of several steamship lines.

Madras on the east coast, though now the third city of the country, has not a good harbor. As a consequence it is losing some of its commerce to other ports. Moreover, its railroad connections are not so good as those of Bombay. It has, however, a large export trade in hides, skins, and cotton from the Deccan. Hyderabad, ranking next in size to Madras, is the trade center of the Deccan (Fig. 434).

Delhi is an old and interesting city which in 1911 replaced Calcutta as the capital of the great Indian Empire. It is located in the higher, cooler part of India, and its climate is far better for Europeans than that of Calcutta (Fig. 434). Another advantage is the fact that it lies nearer the heart of the country that must be ruled. It also has excellent railroad connections in all directions.

"International Newsreel"

FIG. 453. **In a timber yard at Rangoon.** Find Rangoon on the map (Fig. 427). What do we call the part of India in which it is located? On what river is it? What is the natural vegetation of this region? (Fig. 428.)

Study the picture closely. What kind of timber do you think the elephants are piling? (Sec. 186.) Teak is a typical tree of the kind of tropical forest found in monsoon regions. Look up teak in the dictionary. For what purposes is the wood used. Why? Study the elephants in the picture. Tell how they differ from the African elephants seen in Fig. 417. Try to find out which is easier to train, the African or the Asiatic elephant. What advantages has an elephant over a horse as a work animal?

Rangoon, the chief city of Burma, has long been an exporting port. Its location on the Irrawaddy River gives it a fine opportunity for carrying on trade with the interior. It is a shipping center especially for rice and teakwood (Fig. 453).

Karachi, a seaport in the delta of the Indus, is the port of shipment for wheat grown in that section of the Indus Valley. Colombo, the largest city of Ceylon, has a fine harbor and is the chief port of the island.

Problems of India. The government of India constantly faces the problem of how best to help the people improve their condition. Their religions differ from that of the English, they do not have the same interests, and hence they are sometimes restless under British government. How to get the different groups of people to work together and to take an interest in improving the conditions of the country are the chief problems. Railroads and irrigation works must be increased and the people must be taught that they can secure better living conditions only by coöperation among themselves.

187. INDO-CHINA AND THE MALAY PENINSULA: THE LAND OF TEA, TIN, AND TEAK

THE LESSON FORECAST

1. Why the population is dense in the river valleys and coastal areas.
2. Why the French are especially interested in this part of Asia.
3. How and where tin is mined and for what it is used.
4. Problems in the development of this region.

What Indo-China includes. East of Burma and south of China is a hot, moist region extending to the tip of the Malay Peninsula and almost to the Equator. This region, once known as Farther India, is sometimes called Indo-China. It includes the independent country of Siam, French Indo-China, and the Straits Settlements and Federated Malay States, both colonies of the British Empire.

Much of the region is rough and mountainous, and there are large areas covered with dense tropical forests. Such areas naturally are not well adapted to agriculture and are thinly peopled.

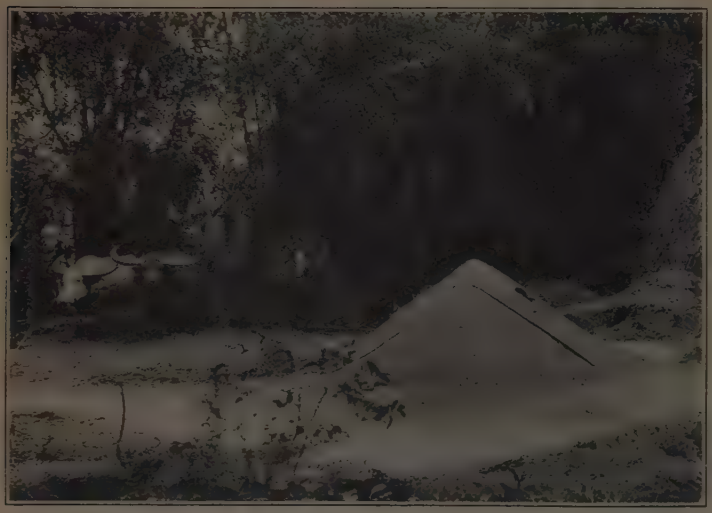


FIG. 454. **Threshing rice in Siam.** The pile of grain you see in the picture is called paddy. Look up in the dictionary the word paddy and tell how it is applied to rice. After rice is threshed it is still covered with a brown husk, which is usually removed in rice mills. See if you can get some unhusked rice from the grocer, and compare it with husked and polished rice. What differences do you see?

Notice the two animals in the picture. Do you know what they are? What are they doing? The trees are bamboo. Learn something about the value of bamboo and the uses made of it.

The river valleys, however, with their gentle slopes, good soils, and warm, moist summers are the homes of a dense population, for they are nearly all good rice-growing regions. The most important crop of Indo-China is rice. Although used by everyone as a food, rice is raised in such great quantities that much of it is exported.

Siam. Siam, although not a large country, has a population of more than 9,000,000. The people, however, are mostly all small landholders depending on agriculture and particularly on rice farming for a living (Fig. 454). The tropical forests are a rich resource, and teakwood is a valuable export. The government has been backward but in recent years, with the aid of men from the United States, has become stronger and the country is now more prosperous. Siam's chief exports are rice and teak, but cotton, tea, tobacco, coconuts, and sugar are grown. There is some manufacturing especially in the region about Bangkok.

French Indo-China. French Indo-China, which occupies the eastern and southern parts of the region, is much cut up by mountain ridges. The central portion is a plateau. The eastern portion bordering the South China Sea does not receive the heavy summer monsoon rains which come to the rets of the region. Hence rice does not thrive here as in other sections, and scarcely enough is grown for the needs of the people. In this section the raising of tea is a growing industry.

Besides rice, cotton, sugar cane, and maize, tobacco and silk are produced in French Indo-China. Other products include spices of various kinds exported to other countries. Fishing is a thriving industry, fish and fish oil being sent to near-by countries.

The Straits Settlements. The Malay Peninsula, because of its favorable climatic conditions, has become the great rubber-producing center of the world (Figs. 455 and 456). The larger part of the world's rubber now comes from the East Indies and the Malay Peninsula and is obtained from cultivated trees.

This region is the only one in the world where tin is found in abundance. Tin is an important mineral used especially to prevent iron from rusting. In the Straits Settlements tin occurs as flakes in the river deposits and can easily be secured by washing the gravels in order to separate the heavier particles of tin. Tin is one of the principal exports of Singapore, but spices, gums, rubber, tapioca, and other tropical products are also exported.

By Burton Holmes, from E. Galloway

FIG. 455. **Native homes on the Malay Peninsula, near Singapore.** What kind of climate would you find here? Why have the houses such steep roofs? Of what are they made? See if you can find in your neighborhood grass that might be used for thatching.

Most of the people in this vicinity work on the rubber plantations. Collect as many samples as you can of articles made of rubber. Why is rubber such an important commodity? In what kind of climate does it grow? Why do you think rubber plantations cannot be operated with white labor?

Federated Malay States. The southern part of the Malay Peninsula is occupied by four small native states under British protection. The chief occupations of the people are the cultivation of rubber and the mining of tin (Fig. 457).

Cities of this region. For a number of reasons the Straits Settlements is one of the most interesting sections of the continent of Asia, but especially because here is located Singapore, one of the great trade centers of the world. It lies at the southeastern corner of Asia where all the ships between Europe and the east coast of Asia must pass. Situated in a tropical country with abundant resources and near the rich Dutch East Indies, it is a busy trade center and a city where people of many different nations meet (Figs. 458 and 459).

Bangkok, in the delta of the Menam, is the leading city and port of Siam with exports of rice and teakwood. It is sometimes called the "Venice of Asia" because many of its people live on the river in floating houses.

Saigon, the chief commercial city of French Indo-China, situated on a river of the same name, has an excellent harbor which is accessible to large ocean-going vessels. Near Saigon is the industrial town of Cholon, the inhabitants of which are mostly all Chinese.

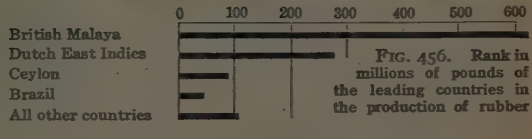


FIG. 456. **Rank in millions of pounds of the leading countries in the production of rubber**

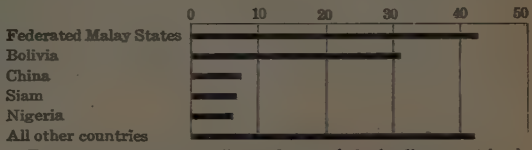


FIG. 457. **Rank in millions of tons of the leading countries in the production of tin**

Problems of the people. Every European country having possessions in tropical regions is, of course, interested in developing their natural resources. Especially those resources that will not only supply the needs of the home country but also build up markets for home products. The problem of the French and the British in Indo-China is not only to develop the country's resources but to help the people make a better living.

188. THE EAST INDIES: A LAND OF RUBBER AND SPICES

THE LESSON FORECAST

1. Names applied to this group of islands.
2. How the riches of the East Indies led to the discovery of America.
3. What the people do for a living.
4. The leading cities of the region.
5. Problems of the people.

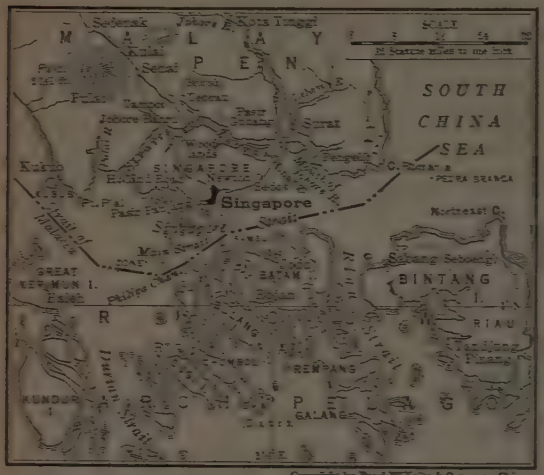


FIG. 458. **Singapore and surrounding territory.** On Fig. 461, outline lightly the area included in this map. Study the map and from it explain why so many steamships touch here. What commodities would you expect to find important in the commerce of Singapore? To what great empire does this [illegible]

The goal of the early navigators. Lying south and east of Asia is a group of islands, large and small, sometimes called the Malay Archipelago but better known as the East Indies. Many of the islands of this group belong to the Netherlands and are called the Dutch East Indies.

These tropical islands have long been known to Europe. For centuries they sent spices and other tropical products to Europe overland by caravans. When the Turks closed the caravan routes, the merchants of western Europe were interested in finding a way to reach the East Indies, or the Spice Islands, by water. Some explorers sailing around Africa found a new water trade route. But Columbus, believing the world to be round, bravely sailed westward over unknown seas hoping that he might reach the East Indies. He reached land, but it was the West Indies he found, not the East Indies. So in reality the discovery of America was due to the fact that the people of Europe were looking for a new way to get the valuable tropical products of these rich East Indian Islands.

The chief products of the East Indies. The large islands of the group are Borneo, Papua (New Guinea), Sumatra, and Java (Fig. 474), all famed for coconut palms. These palms give us copra, the dried meat of the coconut, one of the islands' chief exports. Rice is raised largely but mostly for home use. In production of sugar cane Java ranks next to India and Cuba. The islands together with the Malay Peninsula are the world's greatest rubber-producing region (Fig. 456). Plantations have been set out, and the best-known methods are being followed in caring for the trees. A large part of the crude rubber is shipped to the United States, which uses over three-fourths of the world's output of rubber.

Coffee, pepper, cacao, tobacco, cotton, and tea are raised in many sections. Java was once widely known for its production of coffee, but today the industry is of little importance. From the Moluccas, or Spice Islands, come nutmegs, mace, and cloves.

Why European nations have long been interested in the East Indies. For centuries the East Indies were the only region known where the tropical products so much desired by the people in the cooler countries of Europe could be obtained. Hence merchants were interested in developing trade with these tropical islands. The Netherlands, which is a small country with a dense population, has long led in such trade. While some of the products were needed at home, in most instances a country was also interested in securing possessions from which it could obtain certain products to sell to other countries.

It was easy to develop the East Indies because the natives were willing to work. These islands lie close to Asia with its millions of people, many of whom have been brought to the East Indies to help in the growing and harvesting of crops.

Cities of the region. Much of the trading in the East Indies is carried on by little boats

By Burton Holmes, from E. Galloway

FIG. 459. **The water front at Singapore.** On a journey from New York to Singapore by what two routes could you go (Fig. 509)? Which is the shorter route? Name the bodies of water through which you would sail in each case. What does the picture tell you about the importance of Singapore as a port? How many large steamers do you see? How many smaller boats? How many kinds of vehicles do you see on land? Notice the signboard in the foreground. What do you think it is for?

which call at small ports and collect the cargoes which they deliver to the larger towns for shipment. Although its harbor is a poor one, Batavia in Java, because of its position, is the leading port of that island. But the greatest port serving the East Indies is the gateway city Singapore on the Malay Peninsula (Figs. 458 and 459).

Problems of the people of the East Indies. These tropical East Indian regions have long depended upon the leadership of the nations of Europe. These nations have helped develop their industries and have also furnished a market for their products. Can they continue to hold these markets if other sections raising similar crops are developed? Can the people be more independent and become better able to govern themselves? Can the land under cultivation be increased, or must large numbers of people continue to work a small area of land intensively? These are some of the problems to be solved in this region that was important to the world long before the Americas were discovered.

SOME RELATED PROBLEMS

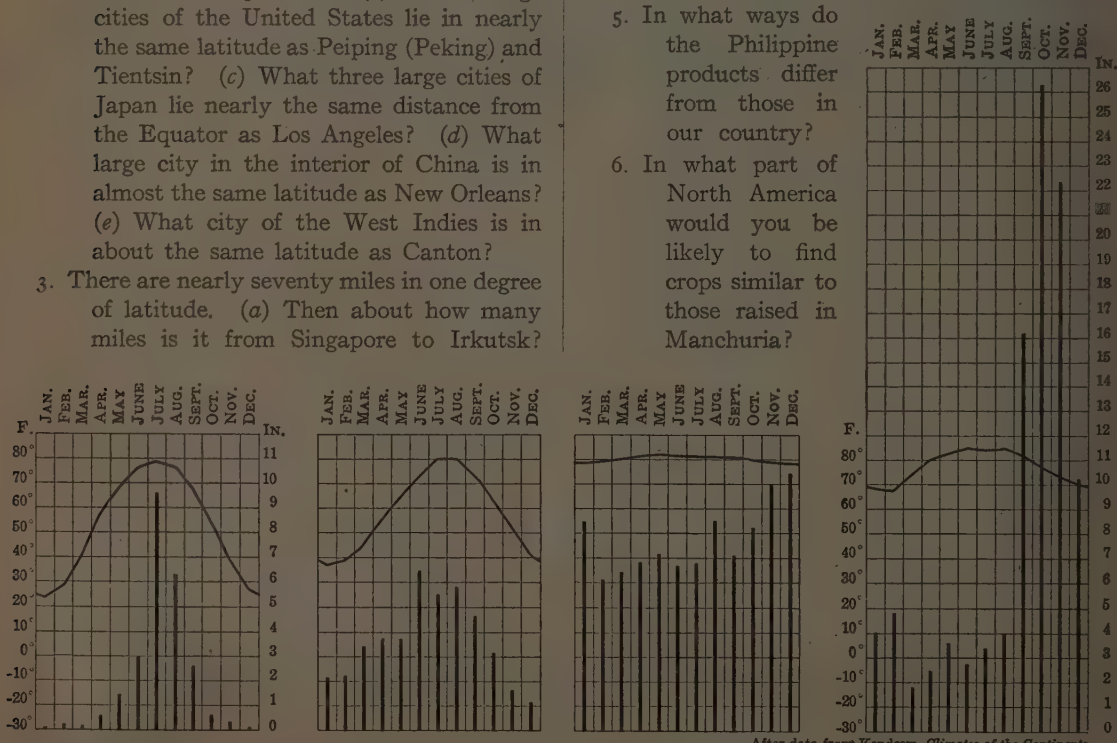
1. Why is the basin of the Ganges densely populated?
2. Why did failure of crops in India once cause more suffering than it does today?
3. Why does India have such varied vegetation and such a variety of crops?
4. Of what advantage are the Himalaya Mountains to India?
5. In what way do the East Indies form an easy route or bridge from Asia to Australia? (See physical map, Fig. 474.)
6. Why is the Strait of Malacca of strategic importance to the British?

COUNTRIES OF THE TEMPERATE MONSOONS AND HIGH, DRY PLATEAUS

189. WHAT THE MAPS, TABLES, AND GRAPHS SHOW

Problems:

1. Why was the region known as the Far East not easily reached by the early European traders? (*a*) What highland lies on the south and west? (*b*) What desert and highland are found in the north and west? (*c*) Why was this part of Asia most easily reached from the ocean? (*d*) Before the Suez Canal was built, how did vessels from England reach this region?
2. How do the large cities of eastern Asia compare in number with those of the United States in the same latitude? (*a*) How many cities in the Far East have a population over 500,000? (*b*) What large cities of the United States lie in nearly the same latitude as Peiping (Peking) and Tientsin? (*c*) What three large cities of Japan lie nearly the same distance from the Equator as Los Angeles? (*d*) What large city in the interior of China is in almost the same latitude as New Orleans? (*e*) What city of the West Indies is in about the same latitude as Canton?
3. There are nearly seventy miles in one degree of latitude. (*a*) Then about how many miles is it from Singapore to Irkutsk? (*b*) How many degrees of longitude and how many miles is it from Manila to Bangkok? How many miles in one degree of longitude at this distance from the Equator? (*c*) In a similar way compute the number of miles in a degree of longitude on the 50th parallel (Fig. 434). Why is the result not the same as that in (*b*)?
4. How do you account for the great differences in climate between Singapore and Peiping? (*a*) How do these two cities compare as to their summer and winter temperatures? (*b*) How many degrees is each city from the Equator? How many miles? Explain the effect of this distance on the temperature. (*c*) Which of these two cities has the higher altitude? (*d*) Explain the wet and the dry season at Peiping (Fig. 460). (*e*) How may the high rainfall in Singapore and its even distribution throughout the year be explained?
5. In what ways do the Philippine products differ from those in our country?
6. In what part of North America would you be likely to find crops similar to those raised in Manchuria?



Peiping, China
Alt. 131 ft. Temp. 53.1°
Rainfall 24.9 in.

Shanghai, China
Alt. 33 ft. Temp. 59°
Rainfall 44 in.

Singapore, Straits Settlements
Alt. 10 ft. Temp. 80.1°
Rainfall 92.9 in.

Hué, French Indo-China
Alt. 23 ft. Temp. 77.7°
Rainfall 102 in.

FIG. 460. Average annual temperature and rainfall for four cities of the Far East

FIG. 461. **A Map of the Far East**

Photo by Underwood & Underwood, New York

FIG. 462. **A farming scene in China.** The animal at the plow is a water buffalo. Find a picture of a cow and list the points of difference you see.

In what latitude is China? From the man's clothing, what part of China do you think this might be?

Compare this scene with the English plowing scene in Fig. 327. Why does this farmer not plow so deeply nor with such even furrows as the English farmer does? Which will have to work harder to get the land in shape for planting after it is plowed?

190. CHINA: THE OLDEST NATION OF THE WORLD

THE LESSON FORECAST

1. The great age, extent, and population of China.
2. The three main divisions of China.
3. Why few domestic animals are raised in China.
4. The characteristics of temperate China.
5. Where tropical crops are grown.
6. Why China is becoming interested in developing foreign trade.

Results of China's isolation. China, together with its dependencies to the west and north, occupies more than a quarter of the continent of Asia and contains nearly a fourth of the population of the world. It was an old nation when Greece and Rome were young.

Until within the last century China had little to do with the rest of the world. It was shut off from other nations of Europe and Asia by high mountain walls or great desert regions. The Chinese, moreover, did not develop commerce by sea to any great extent. Instead they shut themselves up within their country and depended entirely upon their own resources, as to a certain extent they do today. Two hundred years before the birth of Christ, in order to protect themselves from enemies from the interior, the Chinese built the famous Great Wall. This wall extends across country for 1,700 miles over hills and through valleys. It is about thirty feet high and twenty-five feet wide on top, with towers for watchmen at frequent intervals. Today this wall, while a feature of interest, is no longer useful.

The three main divisions of China. Most of the people of China live in or near three river valleys, the Hwang Ho in the north, the Yangtse Kiang in central China, and the Si Kiang in the south. Although China is divided into three parts, most of the people in each division get their living from the soil (Fig. 462). The same farms have been tilled for thousands of years, and in order that the soil may yield good crops every means is used to keep it fertile. Most of the farm work is done by hand—indeed, all Chinese farmers are really gardeners. Since all the land under cultivation must be used to raise food for people, there is little room to raise grains or other food for any animals except poultry. Hence there are few work animals, and butter and milk are not used.

The temperate region in China. Northern China has a warm summer, but since it is not protected, as is India, from the cold winds of the interior, the winters are cold. They are even colder than winters at places

on our eastern coast that are the same distance from the Equator. In this region the fruits and grains grown are similar to those raised in the temperate sections of our country. The people depend mostly on millet, peas, and beans for food.

The subtropical region of China. In the valley of the Yangtse Kiang the winters are not cold, and because of the winds that blow from the warm ocean the summers are warm and moist. Here every farmer grows rice (Fig. 447), the chief food of the people. Here, also, we find the bamboo, one of the most useful of plants, since it can be made into many different articles needed in the homes. The mulberry trees furnish food for silkworms. But the production of silk is less important than it once was, since the people do not study new methods and cannot meet the competition of more progressive peoples. Cotton and tea also are raised here.

The valley of the Yangtse Kiang is one of the most densely populated areas in the world. Every inch of good land is used, and thousands of people live on boats anchored in streams and along the shore, or in caves (Fig. 15). Many people make their living by fishing, for the Chinese eat large quantities of fish. Fish and rice are common articles of food over large parts of China.

The tropical region of China. In the Si Kiang Basin of southern China, the climate is hot and the summers long and moist. Here the crops are much like those raised along our Gulf coast and in Central America. In addition silk is produced, and tea and some spices and bananas are grown. Valuable woods such as mahogany and ebony, as well as other tropical products, are found here.

Products of mines and factories. China has extensive deposits of minerals, but none of them has been developed except coal and iron in certain sections for use in the factories.

The Chinese have always been famous for their handmade products. The industries were carried on largely in the homes, and even today much of the manufacturing, especially weaving, is done in this way. But in the neighborhood of the larger cities factories are increasing in number, particularly cotton and silk mills and steel works.

In northern China with its cold winters there is a great demand for woolen goods, while in the southern part more cotton and silk are used.

How trade has been developed. Trade throughout the vast country of China is carried on largely by water along the great rivers. When these streams are flooded by rains, it is possible for large steamers to go far back into the interior. At other times the trading is done by smaller steamboats or by Chinese sailing vessels known as junks. Owing to the lack of animals in China, much of the freight is handled by porters, either as loads on their backs or by the use of wheelbarrows.

Most of the foreign trade of early times was in silk and tea carried overland by caravan to the markets of Europe. Now this trade centers in the several great ports of the country which within the last fifty years have been opened for foreign commerce. For centuries the Chinese did not believe that they needed anything from other countries, and they therefore kept all foreigners out of their country. The modern use of certain products, especially that of kerosene, has taught the Chinese the value of trading with other countries.

Chinese education and character. Through the centuries China developed a system of education and a language that was distinctly for the Chinese. Men selected for government positions were chosen through a system of very difficult examinations for which it took years to prepare. The Chinese have now simplified their method of writing, and English is being taught in many schools. Young men have been sent to Europe and

America to learn modern methods of industry and government, and under their leadership China is changing rapidly in many ways. New industries are being introduced, and the Chinese are learning how to do business with other peoples. The Chinese have long been known as a people that honestly carry out any agreements made. For this reason people like to do business with them. Some day China with its many millions will doubtless be a strong nation—one of the great nations of the world.

191. CHINESE DEPENDENCIES, CITIES, AND PROBLEMS

THE LESSON FORECAST

1. Why Manchuria is valuable to China.
2. The crops and products of Manchuria.
3. Why the plateau and basin region is so dry.
4. Why Tibet is thinly populated.
5. Factors in the location and growth of leading Chinese cities.
6. The problems pressing the Chinese people for solution.

Manchuria: a Chinese frontier. To the northeast of China lies the great province of Manchuria at the same distance from the Equator as is New England on the eastern side of North America. But the climate in Manchuria is more severe than in New England, and for this and other reasons Manchuria has not been developed. Progress has been made, however, since the building of the Trans-Siberian Railway. Throughout large areas the soil is excellent, while the summer climate encourages the growth of such crops as wheat, millet, soya beans, and barley. In some sections rice thrives. All these are foods needed by China, and Chinese farmers have recently emigrated to Manchuria in large numbers. Soya beans are a rich food which, either in the form of paste or as a vegetable, can be used in many ways. The oil, which can be pressed out in the same way as cottonseed oil, is used for lubrication or lighting. The oil cake that remains is used as a food for cattle or as fertilizer just as is cottonseed cake. Soya beans, therefore, are being grown in increasing quantities each year and form with their by-products such as oil and oil cake an important export.

Northern Manchuria is a rough country with long, cold winters. In this region great numbers of long-haired dogs and goats are raised for their fur. Silk is a valuable product of southern Manchuria.

Since 1907 Manchuria has developed its valuable resources of coal (Fig. 463) and iron and has increased its manufactures, especially those of oil, carpets, and rugs. Some cotton mills and steel works also have been established.

Most of these industries are located along the railroad in southern Manchuria, where the products can be easily shipped. This line is connected with the Trans-Siberian Railway. The province has many navigable rivers.

The interior plateau and basin provinces. Stretching northward from the Himalayas to Siberia is a great series of high plateaus and mountain ranges in which few people live. Shut off from moisture-bearing winds from the sea, the region as a whole is very dry, and in winter very cold. Trees grow only in such favored places as the lower mountain slopes or the banks of streams. In some sections hardy grains can be grown, but the people live mostly by raising flocks of sheep, goats, and camels, and in some sections horses and yaks. Good pastures are scarce, and so the people are mostly nomads, traveling from one pasture to another. Since they cannot live in permanent homes, their household utensils must be few in number and easily carried. The weaving of rugs and woolen goods by the women is the only manufacturing. These are sold in the few trading towns and together with skins, hides, and furs form the only exports.

FIG. 463. **The collieries at Fushun, Manchuria.** The coal mines here lie twenty-two miles southeast of Mukden (Fig. 461). How do the collieries compare in size and equipment with those in our own country? The coal deposits in this region were first worked over six hundred years ago by the Koreans, who used the coal in baking pottery. The seams of bituminous coal found here are the thickest in the world, ranging in thickness from 78 to 480 feet.

Tibet, the highest of these plateau areas, lies farthest south. It is a bare and bleak country much of which is little known because the natives discourage the entry of foreigners and because there is nothing there to attract settlers and traders. Being near India, it carries on a small trade with that country in the summer when travel through the mountain passes is possible.

Sinkiang, or eastern Turkestan, is largely a desert whose rivers flow to the lowest points, where the waters collect in salt lakes, as do the rivers around Great Salt Lake in Utah. In the land along the mountain streams irrigation is possible, and hardy crops such as cereals, fruits, and vegetables can be raised. Sinkiang is crossed by caravan routes from India and China which afford some opportunity for trade.

Mongolia is mostly a high desert area, depending on caravan routes for its trade. It was to protect their country from the Mongolians of this region that the Chinese many centuries ago built their Great Wall. Now, however, Chinese settlers are going into Mongolia and are helping to develop its resources.

Cities of China. Peiping, like many other old Chinese cities, is walled. The great walls were built to protect its people from attacks by enemies. Lying at the northern end of the great plain of the Hwang Ho, and having rail connections with all the chief ports and other large cities, Peiping is a natural trade center. Its trade by sea, however, is handled at the port of Tientsin.

Tientsin lies at the northern end of the Grand Canal, which is over 1,000 miles long, and one of the greatest artificial waterways of the world. This city has an excellent harbor and is the leading port of northern China.

Shanghai, situated near the mouth of the Yangtse Kiang, is the largest city and the chief port of all China. Through it passes much of the foreign trade. Shanghai, which has a climate similar to that of New Orleans, is not only a commercial but a manufacturing city with many industrial plants (Fig. 461).

Canton is the chief trade center of southern China and a great industrial city. Its people are energetic and shrewd in business, and the city is growing rapidly. In many ways Canton is the most modern of all the Chinese cities (Fig. 464).

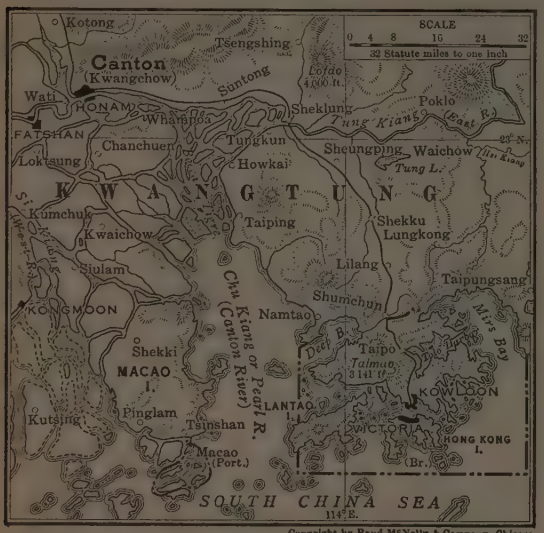


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FIG. 464. **The British Crown Colony of Hong Kong, the city of Canton, and surrounding region.** Estimate the number of square miles in the Crown Colony of Hong Kong. Of what advantage to the British is the possession of this territory? What city in the West Indies lies in almost the same latitude as Canton?

Victoria lies on the island of Hong Kong. Because of its excellent harbor and position, it is the chief port for southern China just as Shanghai is for northern China (Fig. 461).

Hankow, lying on the great bend of the Yangtse, at its junction with a tributary stream, is an important trading center, although 600 miles from the sea. It is the chief city of central China, leading in manufactures as well as in trade (Fig. 465).

There are many other trading centers in China, which depend for their commerce upon their location on a river or on a good land route. Each city is an exporting as well as a distributing center for a large area.

Moukden and Harbin in Manchuria, due to their location on the transcontinental railroad, are both trade centers. Lhasa in Tibet stands on a high plain over two miles above the sea. It is known the world over as the center of a certain religious sect, and most of its people are either priests or monks. Lhasa was long called the "Forbidden City" because until within recent years no foreigners were permitted within it.

By Burton Holmes, from E. Galloway

FIG. 465. **Part of the water front at Hankow, China.** Hankow lies over six hundred miles up the Yangtse Kiang (Fig. 461). In spite of its inland location, the city is really one of China's great seaports, for the Yangtse is navigable the entire distance for large ocean steamers.

Judging from this picture, how do you think most of the freight is carried away from the wharves? Can you see any modern dock machinery here?

Name two cities of China connected by the north-south railroad running through Hankow (Fig. 461).

Problems of the present and future. China is a vast country with a great variety of surface and climate. For centuries its people have been little interested in other countries. Although ruled until recently by an emperor, the people really were governed by local officers. Under this government each province and section was a unit and the people took little interest in the nation as a whole.

Now China is a republic. New leaders are trying to develop its resources. Some of them wish to get rid of the foreigners who have long been the chief business men of China. The Chinese themselves wish to develop their own country. As a result China is in a state of unrest because for many years revolutions and wars have kept the people from their real work.

Manufacturing is largely carried on by foreigners, and people of many nations have made investments in China. Can the Chinese take over, carry on, and develop the business of their country? Can they, without help from outside, make the best use of their many resources of soil and minerals? Can they improve their methods of farming and insure the workers better pay?

Today China's problem is to establish a government which can maintain internal peace. It must be one in which other countries will have confidence, and it must also give the people a larger share in carrying it on.

192. THE JAPANESE EMPIRE: A DENSELY POPULATED COUNTRY

THE LESSON FORECAST

1. How a country with only a small land area supports many people.
2. How the mineral resources and manufacturing help each other in Japan.
3. Why textile and steel manufactures are increasing.
4. Reasons for the importance of fishing.
5. What the chief articles of trade are.
6. Location and importance of the chief cities.
7. Problems of the Japanese people.

The extent of the empire. The Japanese Empire includes five large islands and several hundred small islands off the east coast of Asia. Its extent in latitude is equal to that from Newfoundland to Cuba. The empire also includes the peninsula of Chosen, better known perhaps as Korea, on the continent of Asia and a part of the island of Sakhalin.

Stretching so far from north to south, Japan naturally has a great variety of climate and produces many different kinds of crops (Figs. 466 and 467). Because the islands

FIG. 466. **Threshing rice in Japan.** The workers here are using a comb with teeth made of hard wood. They are pulling the rice stalks through the teeth of the comb to thresh out the kernels of rice. Do you think the rice will be ready for use after being combed? Do you know why the Japanese use so much hand labor?

Compare this scene with the one shown in Fig. 454. Which of these methods of threshing do you think is the better one? The Japanese farmers flood their rice fields, draining off the water shortly before harvest time, just as we do in our country (Fig. 157).

Publisher. Photo Service

FIG. 467. **Picking tea leaves on a hillside plantation, Japan.** Sometimes the bushes on a tea plantation are picked over a great many times in a year. Do you know what part of the bush is used in making the finest tea?

The soil and climate greatly influence the quality and flavor of the tea produced. Most of the tea raised in Japan is known commercially as green tea. Much of it is shipped to the United States. Can you name another kind of tea that is widely used? Do you know why the labor problem is an easy one to solve in Japan?

are almost surrounded by warm ocean waters they are not so cold in winter as is the coast of Asia. Yet the winters in the northern islands are severe, while the climate in the islands in the south is semitropical.

Why the Japanese need more land. The combined area of all the islands of Japan is only a little larger than that of the state of California. Since most of the surface is rough and mountainous, only about a sixth of the land is fit for farming. Yet the population of Japan is more than half that of our country. Until recently the people were able to live on the food raised in their country. But at present, Japan has to import food because it cannot raise enough at home.

Agriculture. In the northern, cooler island peas and beans are the chief products raised for food. In the other islands rice, grown in great quantities, is the principal food crop. Next to the growing of rice, the raising of mulberry trees and silkworms is the largest farming industry. Japan leads the world in the production of silk (Figs. 468 and 469). Tea is grown extensively, and there are a great number of tea plantations in various parts of the islands (Fig. 467), especially in the island of Taiwan (Formosa). This island is also the world's chief source of camphor.

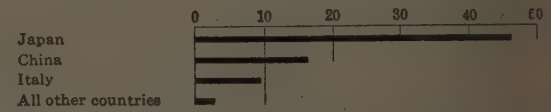

FIG. 468. **The rank in millions of pounds of the countries which lead in the production of raw silk**

Both the growing of tea and the raising of silkworms require a great deal of hand labor. Tea leaves are usually picked by hand three times each year, while in the feeding of silkworms each worm must be handled separately. Japan with its dense population can supply the necessary labor (Fig. 469). In Chosen cotton and soya beans are raised in large quantities, and this peninsula is the center of the sugar industry of Japan.

Japan is rich in coal and copper and other valuable minerals, such as gold and silver, that have not yet been developed to any great extent (Fig. 429). The coal makes possible the development of manufactures in which in recent years Japan has been making great strides. There is abundant water power awaiting development. Because coal is not available for household purposes the Japanese use charcoal (Fig. 470).

Japan today and formerly. The Empire of Japan is an old, old nation. The present emperor is a direct descendant of the first rulers who reigned centuries ago. Until

Publishers Photo Service

FIG. 469. **A Japanese worker reeling raw silk.** The photographer has made the strand of raw silk very much heavier than it really is so that you may see clearly just how the work of reeling on the little machine is done.

In reeling raw silk the delicate fibers, or filaments, from several cocoons are brought together in one strand. This work must be done with the greatest care to keep the strand of even thickness. Can you tell where this worker is holding the cocoons from which she is unwinding the silk fibers? Why do you think women are usually employed to do this work?

Before the filaments can be unwound from the cocoons they must be moistened with hot water or steam. Find out from the picture how this is being done.

Publishers Photo Service

FIG. 470. **Japanese women preparing a meal.** The Japanese do all their cooking in a firebox or charcoal stove instead of using a coal, gas, or electric range as we do in our country. Can you explain what charcoal is? Why do the Japanese use it for fuel?

What do you think the Japanese usually drink at their meals? What kind of cereal will they probably have? The Japanese people eat very little meat. What do you think they have in its place?

Find out all you can about the materials the Japanese use in building their homes. What do they use for beds? for chairs? Do they have much furniture in their homes?

1854 Japan, like China, was little interested in trading with other countries. It was then opened up to trade by Commodore Perry, an American naval officer who visited the country. Since that time Japan has developed rapidly. The Japanese are quick to learn and to use new methods of doing things. They have sent many students to the United States and to European countries to learn western methods of business. They have also established colleges and technical schools. Japan is now a powerful nation.

Reasons for the growth of manufacturing. The progress of the country is indicated

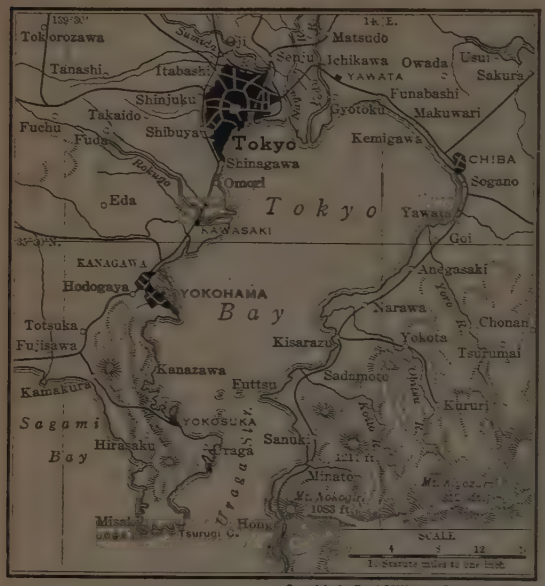

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FIG. 471. **The cities of Tokyo, Yokohama, and surrounding region.** Note the number of railroads running into Tokyo. Can you explain why Tokyo, although a railroad center, carries on most of its shipping through its port, Yokohama? Using the scale of miles, find out how far it is from Tokyo to Yokohama.

especially by the way manufacturing has increased. While there is still much handwork done in small shops and in the homes, great cotton and silk mills, steel mills, and shipyards employing many people are successfully operating in many places.

Cotton spinning is growing steadily in importance. Cotton is easily imported, and labor is at hand for doing the work. All the countries of Asia, especially China, furnish markets for cotton goods, and the demand in the home country is large.

Why fishing is important. Another industry that furnishes a living to many of the Japanese is fishing. The warm ocean waters in the south and the cooler waters of the seas in the north abound in food fishes. The Japanese, like the Chinese, raise few animals, partly because they have no land for grazing. Hence fish and rice are their chief foods.

Need for better transportation. Because of the rough surface of the land, the roads of Japan are poor. But railroads are being built throughout the islands. Communication by water is easy, and a great fleet of vessels has been developed to carry on trade between Japan and other countries, especially China, the East Indies, India, the United Kingdom, and the United States.

The exports are largely raw silk, silk and cotton goods, copper, straw goods, and tea. The imports include rice, sugar, cotton, iron, timber, petroleum, and machinery.

The cities of Japan. Japan has many large cities, two of which have more than a million inhabitants. Tokyo, the seat of the government, is a center of manufacturing and a port. Because its harbor is poor, it must depend on Yokohama, the chief port of the empire, for much of its trade (Figs. 471 and 472).

Osaka, a cotton-spinning city and a flourishing trade center of the Orient, is the largest city. Nagoya, the third city in size, is the seat of manufactures, especially pottery and fancy ware. Kyoto is the center of art industries (Fig. 473). Kobe, with a fine harbor and excellent rail connections, is the great commercial port of the empire. Nagasaki, with a splendid natural harbor, is the terminus of a government railway line.

Problems of the Japanese people. Japan is a country which is increasing rapidly in population. Since it cannot raise enough food for its people, it wishes to acquire other sections of the world where they can settle. But Japan did not begin to seek colonies until other nations had already secured all the most desirable lands. Moreover, the near-by regions of Asia belong to other nations, and so do the warmer sections of the continent in which the Japanese would be able to carry on their usual occupations.

Japan can easily secure raw materials for its factories and can develop its shipping. Can it improve the living conditions of the people so that they will be better satisfied? That is the greatest problem of the country.

FIG. 472. A view in Yokohama. The city of Yokohama is the place where most visitors to Japan disembark (Fig. 471).

Notice the steep flight of stairs in the picture which lead to the top of the wooded bluff. The fine view from the bluff across Tokyo Bay amply repays the visitor for climbing the 101 steps. On this bluff are the homes of the foreign residents of Yokohama. Here too is the One-Hundred-Step-Tea-House built on the spot where Commodore Perry viewed the city. Consult your United States history to learn about Commodore Perry and his mission to Japan.

What does the vegetation seen in the picture tell you about the rainfall here?

FIG. 473. A street scene in Kyoto. This picturesque street, appropriately known as the "Street of Steps," leads into another quaint street called "Teapot Lane."

Locate Kyoto on the map (Fig. 461). What two other large cities lie near it? Kyoto was the former capital of Japan. It is surrounded on three sides by hills and is considered the most beautiful city in Japan because of its surroundings and its many fine buildings.

Kyoto is noted for its manufactures of artistic embroideries, velvets, silks, and brocades, and for its pottery and porcelain. Sometimes it is referred to as the Paris of Japan. Can you explain why?

SOME RELATED PROBLEMS

1. What great mountains, plateaus, deserts, and delta plains are found in China?
2. Why has the Hwang Ho been named "Yellow River" and "China's Sorrow"?
3. Why is it appropriate to call the Chinese "Farmers of Forty Centuries"?
4. Why are European countries interested in China as a market for their products?
5. Why do many of the Chinese people live on canals and rivers?
6. Why would you expect the east coast of Japan to have more rainfall than the west coast?
7. Why are the Japanese greatly interested in China, especially in Manchuria?
8. How does the scarcity of forests handicap the Chinese people?
9. How would a greater development of manufactures profit the Chinese and Japanese?
10. Is it likely that fishing will become more or less important in the Far East?

FIG. 474. A Physical Map of Australia, the Malay Archipelago, and Part of Oceania

AUSTRALIA, NEW ZEALAND, AND THE PACIFIC ISLANDS

193. WHAT THE MAPS, TABLES, AND GRAPHS SHOW

Problems:

1. Why is much of Australia little used by man? (*a*) Where do most of the people live? (Fig. 480.) (*b*) Compare Wyndham and Mandalay as to seasonal distribution of rainfall and temperature. Which city do you think has the better climate? (Figs. 445 and 475.) (*c*) How does Alice Springs compare with Karachi as to seasonal temperature and rainfall? (Figs. 445 and 475.) (*d*) Where on the west coast of the United States is there a city with a climate similar to that of Hobart? (Figs. 225 and 491.) (*e*) Why is much of the interior of the continent not suitable for occupation by man? (*f*) How much of the northern part is suitable for occupation? (Fig. 479.) (*g*) Compare the climate at Fresno (Fig. 225) with that at Broken Hill (Fig. 476). (*h*) How does the climate at Hué (Fig. 460) compare with that at Cape York? (Fig. 476.) (*i*) Would you expect Australia in time to become a densely populated country?
2. What disadvantages does Australia have in trading with foreign countries? (*a*) Study Figs. 477, 484, 486, and 492, to find out what the people have to sell. (*b*) How far is it from New York to Melbourne by way of the Panama Canal? by way of the Suez Canal? (*c*) How far is it from Melbourne to London by way of the Suez Canal? (*d*) Why is it unlikely that Australia will develop a large commerce with India or China?
3. Why are the possibilities for irrigation in Australia not as promising as in India? (*a*) Locate the areas of greatest rainfall in both countries (Figs. 426 and 479). (*b*) Compare the length and size of the rivers flowing from the areas of heavy rainfall in these countries. (*c*) Which would furnish the most water for irrigation?
4. Why are most of the people and cities of Australia found near the coast? (*a*) Why are travel and transportation to the interior difficult? (*b*) Why is not the interior covered with a network of railroads? (*c*) Where are the leading agricultural and mining regions? (*d*) Is it probable that the northern monsoon region of Australia will support many people? Compare with regions in Asia which have a corresponding climate. (*e*) Why is southern Australia a better place for white people to live in than is the northern part? (*f*) Why is the population greater in the eastern part of Australia than it is in the western part?
5. Why would you expect New Zealand to have a climate similar to that of our

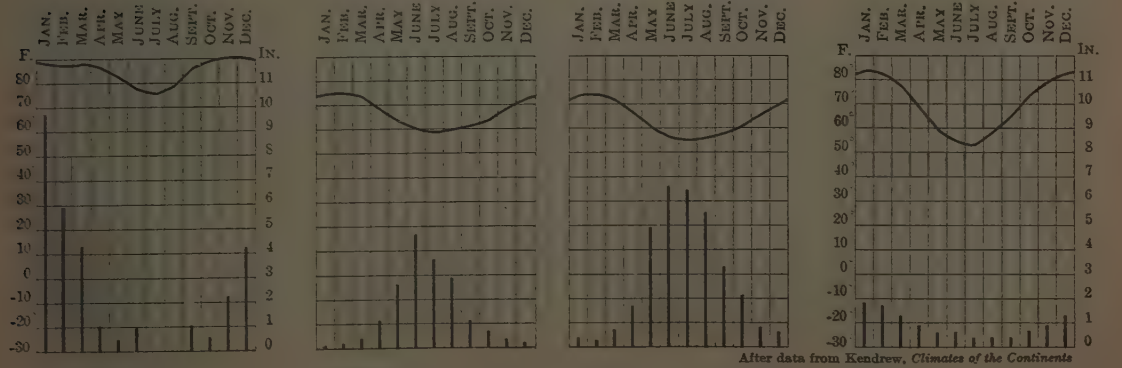
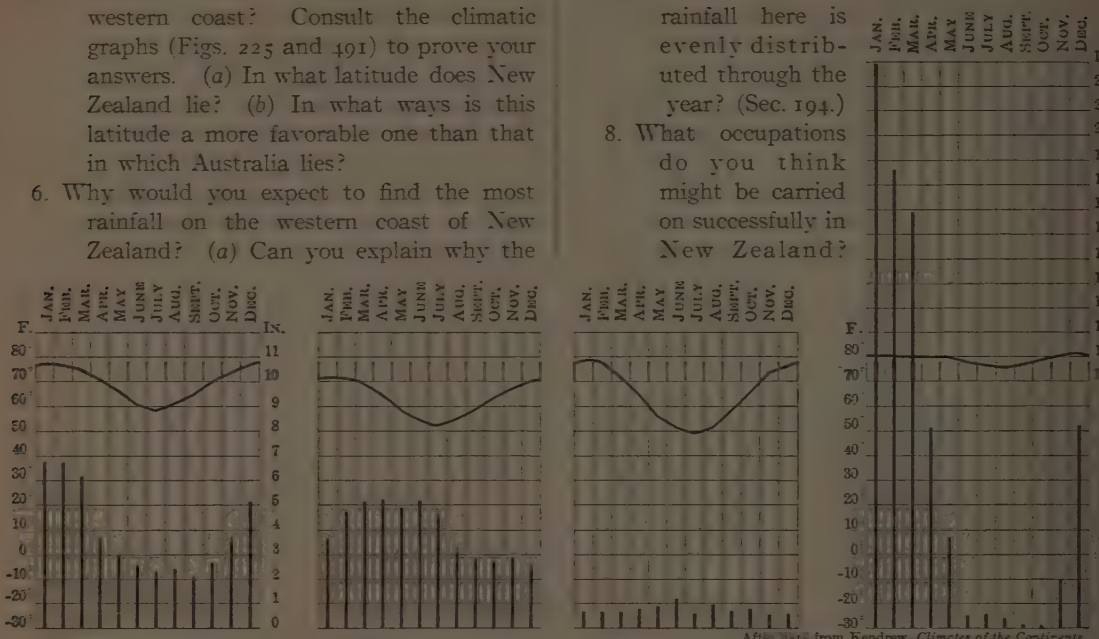

JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT. OCT. NOV. DEC.
F.
IN.
80 70 60 50 40 30 20 10 0 -10 -20 -30
11 10 9 8 7 6 5 4 3 2 1 0
Wyndham
Alt. 23 ft. Temp. 84.9°
Rainfall 28.4 in.
Alt. 13 ft. Temp. 66.5°
Rainfall 17.8 in.
Perth
Alt. 197 ft. Temp. 64°
Rainfall 33.3 in.
Alice Springs
Alt. 2,000 ft. Temp. 69.7°
Rainfall 11.1 in.
After data from Kendrew, *Climates of the Continents*

FIG. 475. **Average annual temperature and rainfall for four cities of central and western Australia**

western coast? Consult the climatic graphs (Figs. 225 and 491) to prove your answers. (*a*) In what latitude does New Zealand lie? (*b*) In what ways is this latitude a more favorable one than that in which Australia lies?

6. Why would you expect to find the most rainfall on the western coast of New Zealand? (*a*) Can you explain why the rainfall here is evenly distributed through the year? (Sec. 194.)

8. What occupations do you think might be carried on successfully in New Zealand?



After data from Kendrew, *Climates of the Continents*

Brisbane
Alt. 137 ft. Temp. 68.8°
Rainfall 47 in.

Sydney
Alt. 146 ft. Temp. 63°
Rainfall 43 in.

Broken Hill
Alt. 1,000 ft. Temp. 64.7°
Rainfall 9.3 in.

Cape York
Alt. 69 ft. Temp. 79.3°
Rainfall 82 in.

FIG. 476. **Average annual temperature and rainfall for four towns of northern and eastern Australia**

FIG. 477. **A wool show floor in Australia.** The open bags hold samples of different lots of wool. The men seen in the picture are mostly wool buyers. Why should the buyer wish to see a sample of the wool he is purchasing? Find out on what characteristics of wool the grading is based. Learn what is meant by greasy wool and scoured wool. It takes about two pounds of greasy wool to make one pound of scoured wool. Do you think the buyer would care how well the wool was washed?

FIG. 478. A Political Map of Australia, the Malay Archipelago, and Part of Oceania

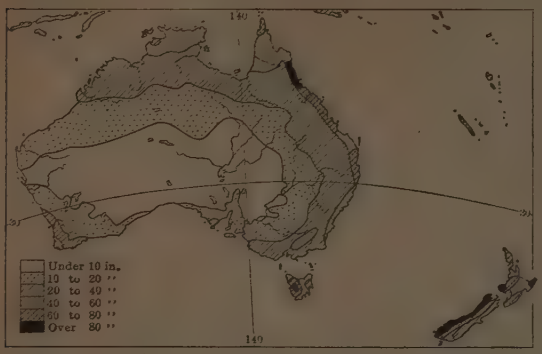


FIG. 479. **The average annual rainfall for Australia and New Zealand.** Why do the eastern coast of Australia and the western coast of New Zealand have the heaviest rainfall? (Appendix, Fig. 494.) Why has the interior of Australia almost no rainfall? What influence have the mountain ranges on the rainfall in parts of these two countries?

FIG. 480. **The distribution of population in Australia and New Zealand.** Why are there so few people on the western side of South Island, New Zealand? As the population of Australia increases, into what sections should you expect people to spread first? Why are there so few people in the interior of Australia and along the northern coast?

FIG. 481. **The distribution of natural vegetation in Australia and New Zealand.** Account for each of the vegetation areas of Australia and New Zealand. Can you tell why the tropical forests of the northern part of Australia are confined to a narrow strip along the coast? Why are dairying and sheep raising important industries in both countries?

194. AUSTRALIA: THE ISLAND CONTINENT

THE LESSON FORECAST

1. The location, size, and population of the continent of Australia.
2. The climate of Australia.
3. Why the rainfall of the eastern coast is evenly distributed throughout the year.
4. Why Australia is handicapped in the production of sugar and cotton.
5. How the discovery of minerals helped to settle Australia.
6. Why an increase in manufacturing will aid Australia.
7. The resources of Australia.
8. The largest cities of Australia.
9. Problems that face the Australian people.

Some interesting facts. Australia is the smallest of the continents and lies entirely in the Southern Hemisphere. It extends southward from the warm tropics far enough so that parts of the southern coast receive rains from the westerly winds (Fig. 494) in the southern winter, which is our summer. Australia, with an area almost as great as that of the United States, has a population of only about 5,500,000, or about two persons per square mile (Fig. 480). This fact shows that much of the country is unfavorable for making a good living. This is true, for a large part of Australia is too dry for agriculture or for grazing (Figs. 479 and 481).

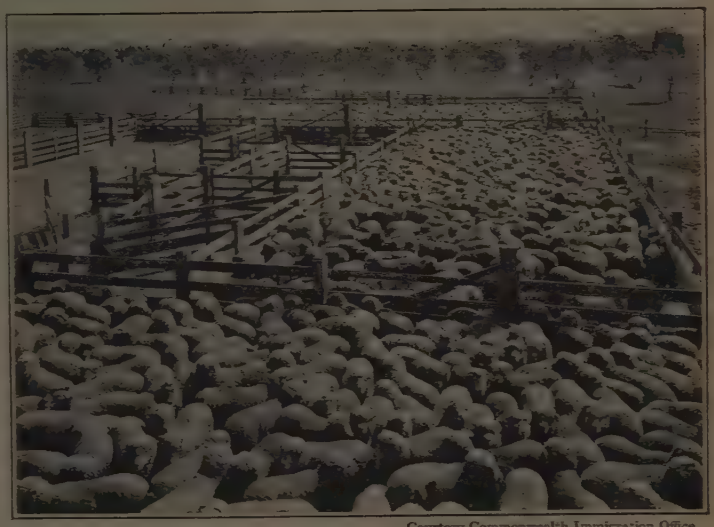
Reasons for a variety of climate. The interior of Australia is largely a dry area because of its location in latitudes which do not at any time receive much rain.

In summer northern Australia receives a heavy rainfall from the northern trade winds. During winter southern Australia and Tasmania, a large island off the southern coast, receive a moderate rainfall from the westerly winds. Elsewhere the winds, most of the time, blow from the east over the warm Pacific. The eastern mountains, although not so high as our Appalachians, cause these

Courtesy Commonwealth Immigration Office

FIG. 482. **A landscape in Victoria Australia.** Locate Victoria on the map (Fig. 478). What industry does this picture represent? Where should you expect Australian dairy farmers to find a market? What two dairy products can be exported?

What is the natural vegetation of this part of Australia? (Fig. 481.) What is the latitude? How much of the year could cattle graze in the open? What advantage would this be to the dairy farmer? Does the owner of this farm provide any feed for his cattle except grass? A building in the picture tells you the answer.



Courtesy Commonwealth Immigration Office

FIG. 483. **Sheep pens in New South Wales.** Study the picture. Why do you think the sheep have been gathered into these pens? How often are sheep sheared? Have those in the picture been sheared as yet? How do you know?

Does the climate in which sheep are raised have any effect on the quality of the wool? Find out in what kind of climate the best wool is produced.

When would sheep raising require the most labor? The smaller farmers, who have not the men and equipment to do their own shearing, take their sheep to public shearing sheds. Here the sheep are sheared and the wool is classified and baled.

winds to rise as they blow over the continent to the warm interior. As the winds rise they are cooled, losing their moisture, and the easterly coast is therefore well watered. On the leeward slope of the mountains, however, little rain falls, and as one goes toward the west-central part the country grows drier and drier. The westerly winds also bring some rainfall to the southeastern coast.

Where agriculture thrives best. In the well-watered coastal areas we naturally find the most people. Here agriculture and especially dairying are carried on successfully (Fig. 482). Here, too, are the largest cities. In the drier plains of the Murray River sheep are raised in great numbers, while wheat is coming to be an important crop (Figs. 483 and 484). In the driest sections few people live except where some mining is carried on. There are parts of Australia still unexplored.

In the tropical sections, which lie farther north, sugar cane is grown extensively and cotton growing is being developed. Both of these crops, however, require much hand

Publishers Photo Service

FIG. 484. **A wheat farm in New South Wales.** New South Wales has about 3,000,000 acres under wheat. Notice how flat the country is. In what other country do we find large wheat farms similar to this one?

Can you tell what kind of plows are being used? How many horses can you count in the picture? How many horses draw each plow? Horses are cheap in Australia, and there is abundant grazing land. Why do the farmers not use many tractors in this country?

To what country will most of the wheat be exported? Why is wheat a good crop for export?

labor, and in Australia there are few people who can work in hot, moist tropical regions.

Since Australia desires to keep the continent a white man's country, it does not permit the bringing in of such people as negroes, East Indians, and other Asiatics who are used to laboring in the tropics. This means that the country must develop those types of agriculture that can be carried on largely by machinery, since white men cannot stand heavy work in this climate. This is one reason for the steady increase in the growing of wheat (Fig. 484).

Possibilities for irrigation. In those parts of our own country which have a climate similar to certain portions of Australia, crops, as you have already learned, are grown by means of irrigation. The heavy rainfall or snowfall on our high mountains furnishes water enough to irrigate large areas. In Australia, because there are not so many high mountains, little moisture is stored away for the growing season, and as a result the land that can be used for irrigation is limited. In those sections where irrigation is practiced, orchard fruits and citrus fruits are raised.

How the mineral resources have helped Australia. Both Australia and Tasmania have rich mineral deposits which are being

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FIG. 485. **The distribution of mineral resources in Australia and New Zealand.** What parts of Australia and New Zealand may some day become great industrial centers? Which metal would be likely to be mined first in a new country?

worked in many localities (Fig. 485). The chief minerals are gold, copper, coal, silver, lead, tin, and zinc. Indeed it was the discovery of gold in Australia, as it was in California, that first brought people to Australia in great numbers and led to the development of the continent.

Manufacturing in Australia. Manufacturing, especially that of woolens, cottons, flour, and meat products, is increasing rapidly. The products are not only used at home but also exported. The manufacturing centers are found mostly in the southern and southeastern sections where the climate is temperate and where most of the people live.

Courtesy Commonwealth Immigration Office

FIG. 480. **A large sheep-shearing shed.** Most of the shearing is done by machine. Study the picture. Notice the large square bundles. Can you tell what is in them? In which part of the building do you think the baling is done? Where are the sheep sheared? For what are the cattle in the picture needed? Find out when many oxen were used in our own country. Learn why they were used and then see if you can explain why they are often used in preference to horses in Australia.

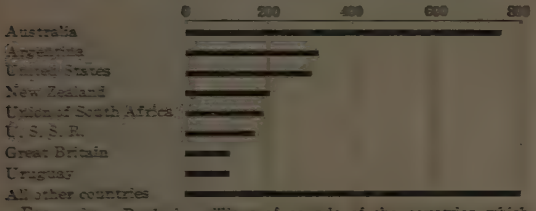


FIG. 487. Rank in millions of pounds of the countries which lead in the production of wool

What the people have for trade. The commerce of Australia is carried on largely with the countries of western Europe, especially with the United Kingdom, and also with the United States. Wool is by far the largest export (Figs. 486 and 487). Other important exports are wheat and flour, hides and skins, butter, sugar, and frozen meats, all products of agriculture or grazing. Gold and lead are also exported. Like other new countries where manufacturing is as yet undeveloped, Australia imports great quantities of textiles and machinery and furnishes the United States with a large market for automobiles.

Why the continent was easily settled. Australia, like Canada, is a part of the British Empire and like that country practically makes its own laws and governs itself. In its early days the country served as a place of exile for undesirable citizens of Great Britain. They found Australia occupied by native people, of whom several thousand still live in the interior of the country. These people, although savages, were not warlike and did not fight for their lands as did the Indians of our country. For this reason, when the opportunities of the country became known, it was easily settled.

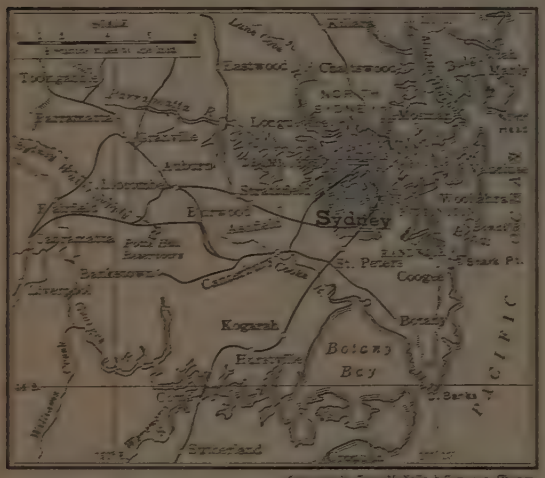
Leading cities of Australia. All the large cities of Australia are ports as well as railroad centers. Each large city is a busy trade center for a wide surrounding area.

The largest city and principal port is Sydney (Fig. 488), which is located on one of the finest harbors in the world. It lies in the center of a dairying region, and the number of manufacturing plants near by is increasing rapidly.

While Melbourne, the largest city in the southern part of Australia, has not so good

a harbor as Sydney, it is an important port and a manufacturing center.

Adelaide, the third city in size, is a wool center because it is located near the sheep-raising regions. It has good rail connections with the cities farther east and is the first port of call for European mail vessels. This city is also connected by rail with Perth, the leading city of western Australia. The city of Perth owes its growth and prosperity to the fact that it lies in the agricultural region of this part of the continent.


Sydney
Botany Bay
Kogarah
Bexley
Eastwood
Chatswood
Liverpool
Parramatta
Ashfield
Burwood
St. Peters
Cooks River
Port Hacking
Banksiatown
Sutherland
Cronulla
Manly
Pittwater
Woodstock
Lane Cove R.
Middle Harbour
North Shore
Georges River
Warringah
Hornsby
Penrith
Richmond
Windsor
Blacktown
Liverpool Plains
Nepean R.
Hawkesbury R.
Warragamba R.
Wollondilly R.
Shoalhaven R.
Illawarra
Wollongong
Port Hacking
Bulli
Helensburgh
Waterfall
Heathcote
Engadine
Miranda
Cronulla
Tuggerah Lakes
Lake Macquarie
Newcastle
Maitland
Singleton
Muswellbrook
Scone
Tamworth
Gunnedah
Narrabri
Moree
Inverell
Glen Innes
Armidale
Tenterfield
Grafton
Casino
Lismore
Murwillumbah
Tweed R.
Clarence R.
Richmond R.
Macleay R.
Hastings R.
Manning R.
Gloucester
Taree
Wingham
Kempsey
Port Macquarie
Coffs Harbour
Bellinger R.
Nambucca R.
Macksville
Bowraville
Urunga
Dorrigo
Bellingen
Kempsey
Wauchope
Kempsey
Port Macquarie
Hastings R.
Macleay R.
Nambucca R.
Bellinger R.
Coffs Harbour
Grafton
Casino
Lismore
Murwillumbah
Tweed R.
Clarence R.
Richmond R.
Tenterfield
Glen Innes
Inverell
Moree
Narrabri
Gunnedah
Tamworth
Scone
Muswellbrook
Singleton
Maitland
Newcastle
Lake Macquarie
Tuggerah Lakes
Wollongong
Bulli
Helensburgh
Waterfall
Heathcote
Engadine
Miranda
Cronulla
Sutherland
Hornsby
Penrith
Richmond
Windsor
Blacktown
Liverpool Plains
Nepean R.
Hawkesbury R.
Warragamba R.
Wollondilly R.
Shoalhaven R.
Illawarra
Wollongong
Port Hacking

manufacturing so that the people will not remain dependent upon imports, especially of textiles. With wool the chief crop and the production of cotton constantly increasing, the raw materials are at hand. Coal is available for power, and textile manufacturing, therefore, can be easily increased.

The success of manufacturing, however, depends also upon developing the railroads and upon building good highways. Then raw materials may be more cheaply brought to market, and trade between the ports and the interior regions can be carried on more easily.

It is easier to develop southern Australia than the northern rich tropical areas, where the labor needed to raise tropical crops is not easily secured.

195. THE DOMINION OF NEW ZEALAND: THE CENTER OF THE WATER HEMISPHERE

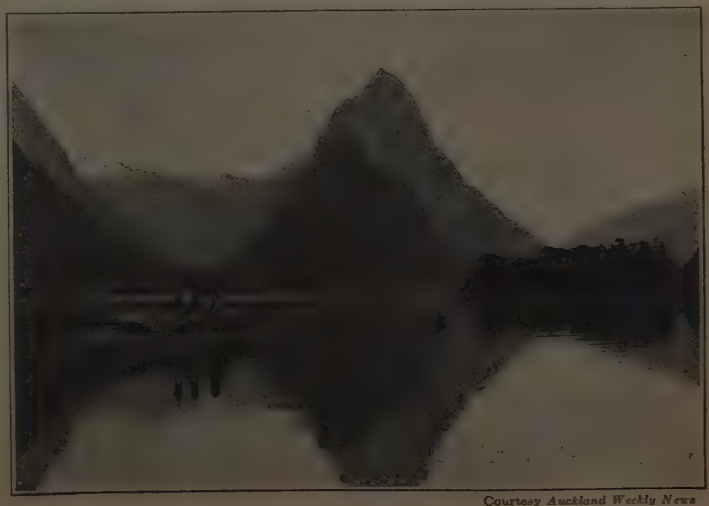
THE LESSON FORECAST

1. Advantages and disadvantages of New Zealand's location.
2. Physical features of special interest.
3. What the people produce for home use and for trade.
4. The leading cities.
5. Problems of present and future development.

The location and characteristics of New Zealand. About 1,200 miles to the southeast of Australia lies the Dominion of New Zealand. It consists of two principal islands, the North and South islands, Stewart Island, and a number of smaller outlying ones. The climate of New Zealand is much like that of the western coast of the United States, for it lies far enough south of the Equator to be swept by westerly winds (Fig. 494) most of the year. There is abundant rainfall, the winters are never cold (Fig. 491), and where the slopes are not too steep much of the land is good for agriculture or for grazing.

The islands are mountainous with a number of snow-capped peaks in South Island. Glaciers descend far into the forests and along the west coast there are many fiords (Fig. 490) which in beauty surpass the Norwegian fiords. On North Island there is an area in which are found geysers and hot springs similar to those in Yellowstone Park.

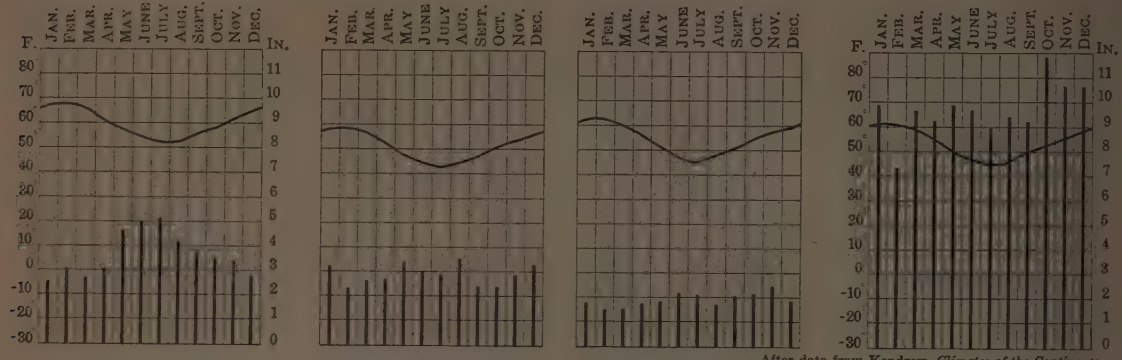
How the people make a living. The climate of New Zealand is moist and is favorable to the growing of grass and most of the crops of the temperate and subtropical zones (Fig. 491). Agriculture and grazing are the leading occupations. Grains such as wheat, oats, and barley are grown for home use,



Courtesy *Auckland Weekly News*

FIG. 490. **A fiord on the coast of South Island, New Zealand.** What is a fiord? In what other country did we find them? How are fiords formed? Do you think this region might be worth visiting for the beauty of its scenery? The mountain is called Mitre Peak, and the fiord is Milford Sound.

This inlet is on the west coast of the island, near the southern end. In what highland is it? (Fig. 474.) From its latitude, what would you expect the climate of New Zealand to be? Look at Fig. 491 and see if you are right. Can you account for the even temperature in New Zealand?



Auckland, New Zealand
Alt. 260 ft. Temp. 59.4°
Rainfall 43.7 in.

Dunedin, New Zealand
Alt. 500 ft. Temp. 50.5°
Rainfall 34.6 in.

Hobart, Tasmania
Alt. 160 ft. Temp. 54.3°
Rainfall 23.6 in.

Hokitika, New Zealand
Alt. 13 ft. Temp. 53.1°
Rainfall 116 in.

After data from Kendrew, *Climates of the Continents*

FIG. 491. Average annual temperature and rainfall for four towns in New Zealand and Tasmania

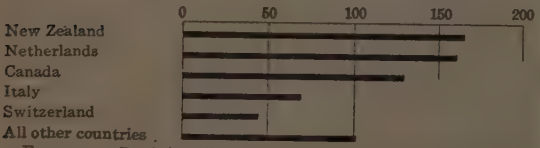


FIG. 492. Rank in millions of pounds of the leading countries in the export of cheese

while the products of sheep and cattle are exported in great quantities. Dairying is a steadily growing industry, and New Zealand already ranks high in the production of butter and cheese (Fig. 492).

Sheep are raised in part for their wool but more for their meat (Fig. 46). Since the invention of refrigeration, whereby animal products can be kept cool even during a long trip through the hot tropics, New Zealand has developed an important trade with Europe in frozen lamb, mutton, and beef. Exports of bacon, ham, and frozen pork are also increasing steadily.

The forests include many valuable trees, some of which are especially useful for their gums.

Cities of New Zealand. The largest and most beautiful city is Auckland, on North Island, which, partly because of its location on the coast nearest Australia and partly because of its excellent harbor, is the chief port for foreign trade. Wellington, a railroad center and the second city in size, has the only first-class harbor on North Island. It is the connecting port with South Island. Christchurch, the chief city of South Island, lies in the heart of a good agricultural region. It is a manufacturing and a trade center.

Problems of the people. New Zealand is nearer Europe by way of the Panama Canal than it is by way of the Suez Canal. This makes it easy to trade with the United States as well as with Europe. This trade, however, has not yet become important, since New Zealand's products are much like those of our own country, some of which we export.

Can New Zealand increase its trade with the United States by developing not only products needed in our country, but products which have a large value but are small in bulk? Such products can be exported profitably although the markets are far away. New Zealand is handicapped by lying near the center of the Water Hemisphere of the earth and far from the more densely populated regions of the world. How can the country overcome the handicap of its location?

In scenery and in climate New Zealand has many attractions. Where the mountains meet the ocean the coastal scenery is famed for its beauty. Can it draw more visitors from Europe and America, especially during its winter, which is our summer and the time when most of our people take their vacations?

196. THE ISLANDS OF THE PACIFIC

THE LESSON FORECAST

1. The location of the islands of the Pacific.
2. How many of these islands were formed.
3. Why the islands are valuable.
4. Why they are of interest to tourists.
5. Why the British are interested in Fiji.

How the islands of the Pacific were made. Scattered throughout the Pacific Ocean, especially in the tropics, are hundreds of islands or groups of islands belonging to different nations. Some of the larger groups, such as Hawaii and the Philippines, we have already studied. Many of these islands are the tops of volcanoes, while some are the higher parts of extensive land areas, most of which lie under the shallow ocean waters. Many of the islands have been built up to the surface of the ocean by the work of the corals which live only in warm seas where the waters are constantly in motion. Many of these coral islands are covered or bordered with coconut palms. They are a great source of copra, which is collected by small vessels and taken to the larger ports for shipment to distant markets.

Why the islands of the Pacific are valuable. Some of the islands of the Pacific are used as fueling or naval stations for vessels making the long voyage across the broad Pacific. Some of them, like the Fiji and Samoan islands (sec. 92, p. 209, and Fig. 493), are densely populated. Many of the people of these islands live in a primitive way, for it is easy to get food, and little clothing is needed.

Photo by B. F. Rogers from Underwood & Underwood

FIG. 493. **An American hospital at Pago Pago, Samoa.** Pago Pago is a United States naval and coaling station. Why does the United States need a coaling station in the South Pacific? The hospital is operated by the United States Navy for the benefit of the natives. Does it differ in appearance from hospitals you have seen? Notice in the picture the native building at the left. Do you know what material was used in constructing it?

Find the Samoan Islands on the map (Fig. 478). Learn how many of them belong to the United States. To what country do the others belong? About how far are they from the United States? from the nearest United States possession? Of what value are they to our country? Pago Pago has the finest landlocked harbor on any Pacific coast. Explain the meaning of landlocked.

Copra is the leading export of Samoa. Of what tree is copra the product? Name some of its uses. Tell in what other countries we found copra an important product.

Fiji, a group of islands in the South Pacific (Fig. 478), is a British colony. There are over 85,000 acres of land under cultivation, and the principal export products are sugar, copra, and bananas.

The large island of New Guinea or Papua (Fig. 478) is divided between the Netherlands and the British Empire.

During recent years tourists have visited the islands in increasing numbers, for they have many features that are interesting to people who live outside the tropics. The problems facing those who control these islands is to teach the native peoples how to make a better living and how to produce products that are of greater value to other peoples.

SOME RELATED PROBLEMS

1. Why are there not more railroads in Australia?
2. Why is most of northern Australia a grassland rather than a forested jungle?
3. Why does southern Australia have a climate much like that of California?
4. Although there are no high mountains in the interior, why has exploration there been difficult?
5. In what way did the early settlement of Australia resemble that of California?
6. Why are almost all the important cities of Australia on the southeastern coast?
7. Why is it about as cheap to transport wheat from Australia to England as it is from central United States to England?
8. Why are Australia's products for trade almost wholly raw materials?
9. Why do the eastern slopes of the mountains of Australia receive the most rainfall, while in New Zealand the western slopes of the mountains receive the most?
10. Why is the interior of Australia a desert while much of the interior of the United States is a rich agricultural region? (See Figs. 94, 98, 479, 481, 495, and 496.)
11. How have nature's gifts in the South Sea Islands been responsible in part for the natives' lack of progress?
12. Although most of the South Sea Islands are close to the Equator, the climate is not unpleasantly warm. Explain why this is so.
13. What important product of the coconut palm comes from the islands of the Pacific?
14. What shows that the Fiji Islanders are more industrious than many others of the island peoples?

THE APPENDIX

THE UNITED STATES AND THE WORLD

The United States, as we have learned, is a great industrial nation, with a very dense population in the manufacturing sections. In order that manufacturing may succeed, a country must, among other things, have an abundance of raw materials that can be used in making machinery for power or for manufacturing finished products. The United States is fortunate in this respect, for it leads the world in the production of iron, coal, and copper (Figs. 503, 506, and 508), the most important minerals in manufacturing. Furthermore the coal and iron are found near the sections where they are to be used, which of course is fortunate.

More than half our people live in cities and are engaged in industry, in commerce, or in other forms of business. City people must be fed well in order that business may be successful. The United States is fortunate in having in the eastern part of the country so much good farming land on which food may be raised fairly near the regions of dense population. Wheat is the most important of the foods needed, and the United States produces so much wheat (Fig. 507) that it can feed its own people and still have about a quarter of its crop each year to export to other industrial nations like the United Kingdom, France, Belgium, and Germany.

Because of the wealth of the United States in all these necessary products, and in many others, the country has grown rapidly in population and in prosperity. When the new nation took its first census just after the Revolution, most of the people lived near the Atlantic coast between Maine and Georgia (Fig. 510). By 1850 the people had spread into the Mississippi Valley (Fig. 511) and occupied most of the part of our country that today leads in manufacturing, agriculture, and mining. These people made a living easily, first chiefly from agriculture, and later also from manufacturing and commerce.

As the value of farm products and manufactured products increased, trade with other continents increased until today our country is one of the leading commercial countries of the world. Our export trade is made up of many different products that go to all the other continents. The largest is cotton, which is needed by the mills of Germany, the United Kingdom, and Japan. We also export great quantities of petroleum to all parts of the world, as well as machinery and automobiles. Our greatest export trade is with the United Kingdom, the Dominion of Canada, Germany, Japan, France, and the Argentine Republic. These are all countries in the Temperate Belt of the world (Fig. 499), where the people are largely engaged in occupations that are similar to those of our own country, and therefore need from us the goods they cannot produce at home.

For imports we draw largely on countries that produce goods which we need but cannot secure in our own country. Our largest import is raw silk from eastern Asia, our second largest is crude rubber from southeastern Asia. These are followed in order by coffee from Central America and South America and cane sugar from Cuba and Hawaii. These countries lie mostly in the Hot Belt (Fig. 499), where the products are of course different from those of our country. Another product that is imported in large quantities is wood pulp for paper making brought especially from Canada and Sweden, in the colder portions of the north Temperate Belt where great forests of evergreens are found (Figs. 81, 256, and 321).

World trade binds the countries and continents together into one great family of nations. Today no continent and practically no country can get along alone. They depend on one another for imports and exports; that is, for needed goods and markets. The great commercial routes (Fig. 73), of both the land and the ocean, are highways that are constantly used. The busiest ocean route is that between

eastern America and western Europe across the North Atlantic. The next busiest is the route from western Europe through the Suez Canal and the Red Sea, beyond which it branches to Africa, Asia, and Australia (Fig. 73). These are chiefly east-west routes, and for a long time were mostly for trade between countries with similar conditions. Today north-south trade is increasing constantly. The new countries of South America, South Africa, and Australia are developing rapidly in business and in commerce. They are furnishing markets for goods made by the manufacturing countries of Europe and North America, and are sending in return food and raw materials. This is especially indicated by the amount of commerce between Europe and South America and between Europe and Australia (Fig. 73).

In this world trade our country has a large share, but it should be borne in mind that the commerce carried on between our country and other countries is but a small part of our trade. The trade between different parts of our own country, that is, domestic commerce, is far greater in amount than the foreign trade. This may be illustrated in many ways. Our railroads receive five times as much income from carrying freight as they do from carrying passengers. Our ports on the Atlantic, the Gulf coast, and the Pacific coast have twice as much coastwise or domestic trade as foreign commerce, and our rivers, lakes, and canals have a trade three times as great as our foreign trade. The more than a hundred millions of people of our country are the great market for food and manufactures produced in the country. Each year our people buy more and more of the products of farm, mines, and factories, and this must continue to be true as long as our population continues to increase.

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FIG. 494. **A Mercator map of the world, showing vegetation.** No flat map of the world can show compass directions correctly, and yet present entirely accurate shapes and areas. If you cut open a hollow rubber ball and try to flatten it out, you will see why this is true. Plans have been worked out for drawing maps with accurate areas, maps with accurate shapes, or maps with accurate directions. We call these plans "projections." The Mercator projection is accurate as to directions. Compare this map with a globe and tell which part of the earth is least accurate. Can you explain why sailors always use the Mercator projection for their charts? Why do the vegetation belts not extend straight across the earth east and west? List as many reasons as you can with examples from the map.

FIG. 495. **Average annual rainfall and prevailing winds of the world.** In what latitudes north and south are most of the deserts? On which sides of the continents do they occur? Why are there deserts in the interior of Asia? Why do we find the largest areas of very heavy rainfall in the tropics? How much rainfall have the parts of the world that are most thickly populated? How is moisture carried from the sea to fall in rain on the land? Why does a west coast in the Temperate Zone as a rule receive more rain than an east coast? On which coast in the tropics should we expect the heavier rainfall, east or west? In what latitude is the region of calms? In which direction across the Atlantic do winds favor airplane travel? This map was drawn on a projection which is accurate as to areas. Why was this projection chosen for a rainfall and winds map?

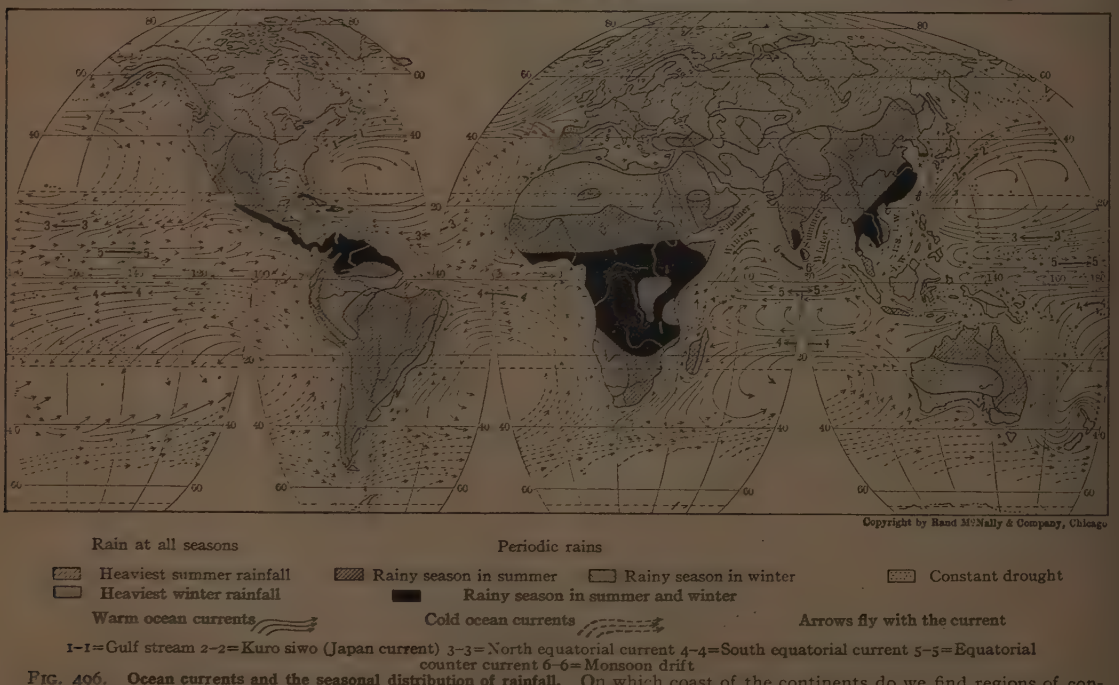
Copyright by Rand McNally & Company, Chicago
Rain at all seasons
Periodic rains
Heaviest summer rainfall
Heaviest winter rainfall
Rainy season in summer
Rainy season in winter
Rainy season in summer and winter
Constant drought
Warm ocean currents
Cold ocean currents
Arrows fly with the current
1–1=Gulf stream 2–2=Kuro siwo (Japan current) 3–3=North equatorial current 4–4=South equatorial current 5–5=Equatorial counter current 6–6=Monsoon drift

FIG. 496. **Ocean currents and the seasonal distribution of rainfall.** On which coast of the continents do we find regions of constant drought? What is the direction of the ocean currents that flow past these coasts? What parts of the earth have two rainy seasons? Can you explain this? Western Europe and the northern part of western North America are warmer in winter than we should expect from their latitude. Explain why from the map (Fig. 497). Note the direction of currents in the South Atlantic. Which would be warmer, the water along the western coast of southern Africa or the eastern coast of South America? Winds blowing over ocean currents are warmed or cooled by the water, and lands to the leeward are changed in temperature accordingly. Compare Figs. 495, 497, 498. How do ocean currents and winds explain the January temperatures on two sides of the North Atlantic, the North Pacific, and the South Pacific?

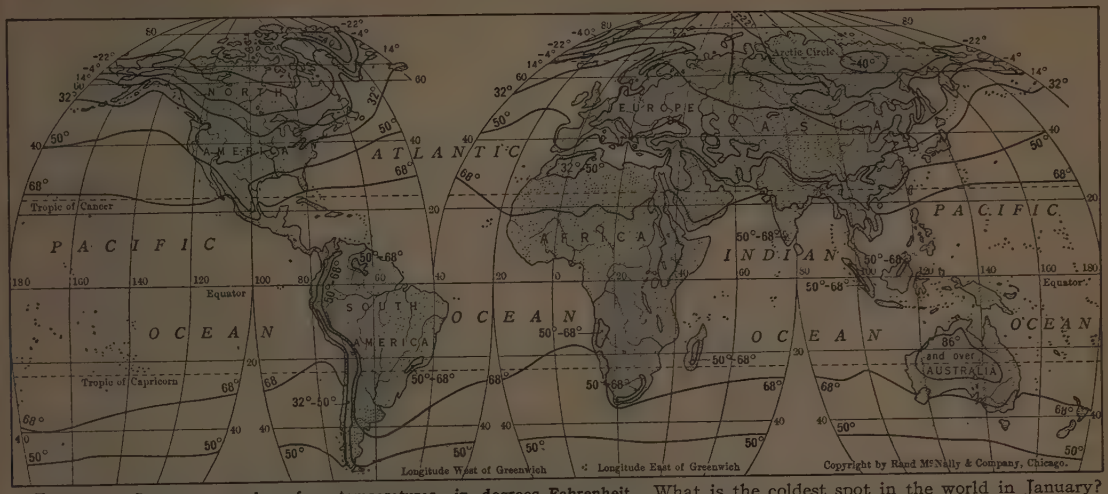

FIG. 497. **January normal surface temperatures, in degrees Fahrenheit.** What is the coldest spot in the world in January? What is the hottest? Trace around the world the belt which has the same January temperature as your home. Why does this belt extend so much farther north in Europe than in America? (Fig. 499.) Why does it swing south again in Asia? Why do the heat belts in western South America appear to run north and south? (Fig. 280.) Account for the extension of the cooler climate into East Africa (Fig. 395). Why is northern Mexico cooler than part of the southern United States? (Figs. 145 and 270.)

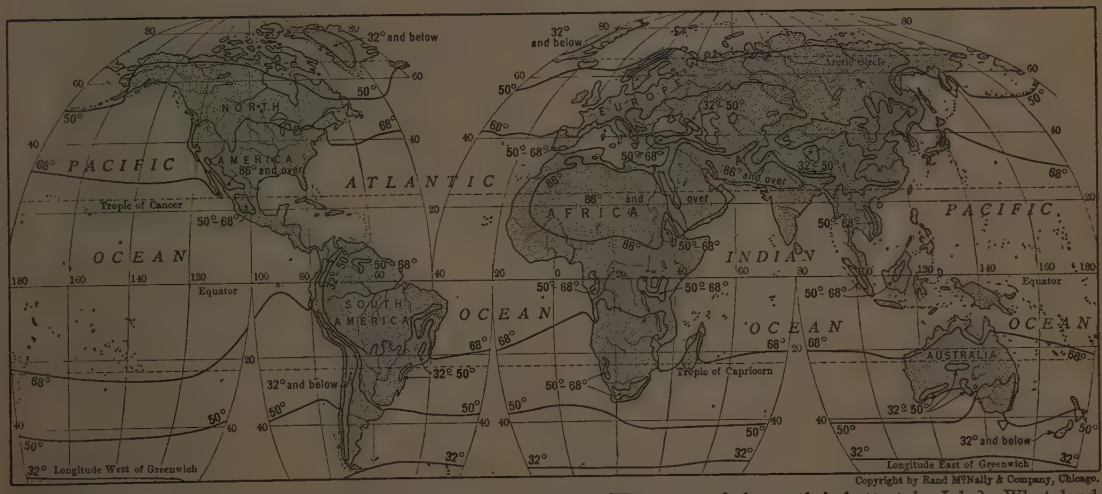

FIG. 498. **July normal surface temperatures, in degrees Fahrenheit.** What part of the earth is hottest in July? What land area is coldest? Why does it grow colder in some parts of South America than in any part of Africa or Australia? (Figs. 280, 395, and 474.) Account for the small cool area between the Caspian Sea and the Black Sea. Account for the very hot area in western North America. What is the reason for the cool area just to the south of it? Account for the vast hot region in northern Africa and southwestern Asia.

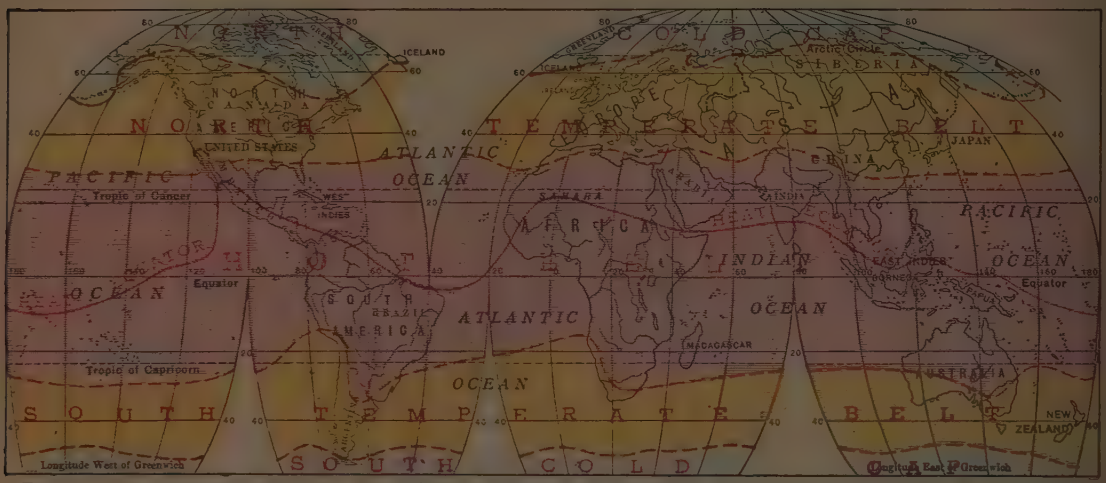

FIG. 499. **The climatic belts of the world.** The lines bounding the belts on this map are drawn through places having the same average annual temperature. Why do the boundaries of the heat belts not follow exactly the lines of the tropics and the Arctic and Antarctic Circles? In general, is the hot belt wider over land or over water? Where does the North Cold Cap reach farthest south? Why is the boundary of the North Cold Cap more irregular than that of the South Cold Cap? Is the heat equator found mainly north or south of the actual Equator? What reasons can you give?

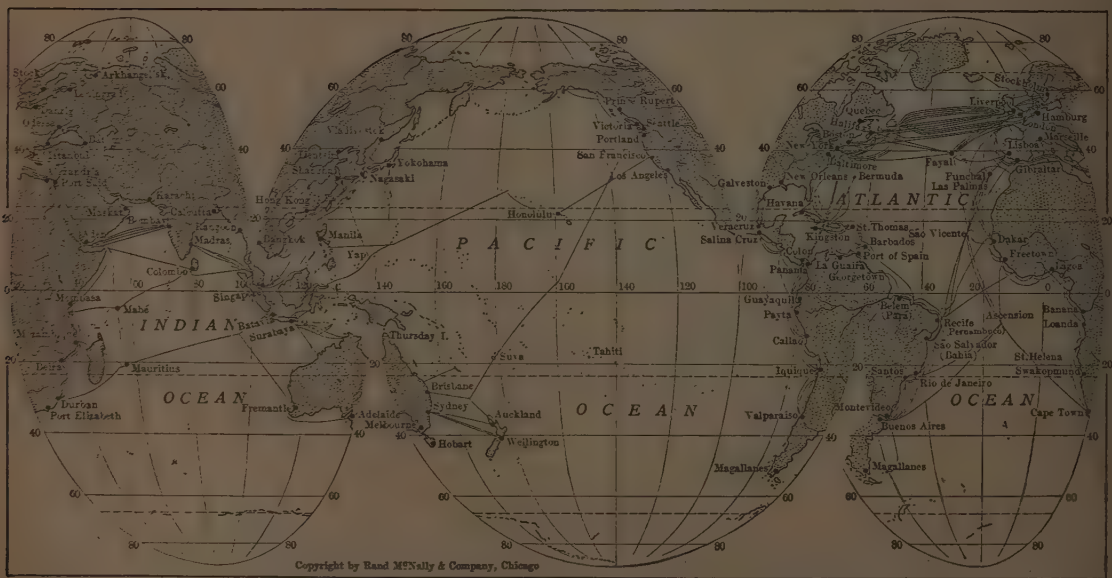

FIG. 500. **Ocean cables and principal coal and fuel-oil stations of the world.** Which two continents have the most cable connections? Why? Why are there so few cables across the Pacific?

Could a steamboat travel all the way around the world without stopping? Could it carry enough food and water? What could it not carry in sufficient quantity? What kinds of fuel do steamers use? If a ship were going from Seattle to Melbourne, where might it stop for fuel? If it were going from Liverpool to Rio de Janeiro? from San Francisco to Cape Town?

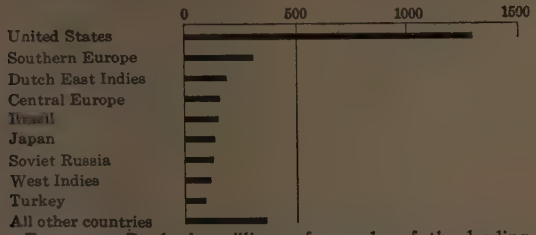

FIG. 501. Rank, in millions of pounds, of the leading tobacco-producing regions of the world. Look up tobacco in the dictionary. Of what continent is it a native?

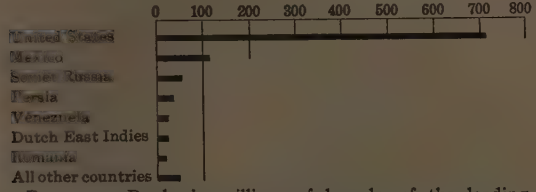

FIG. 502. Rank, in millions of barrels, of the leading countries of the world in the production of petroleum. About how much more petroleum does the United States produce than the rest of the world put together?

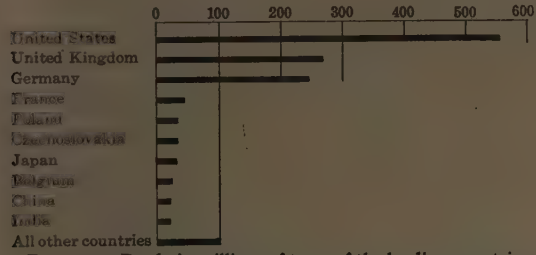

FIG. 503. Rank, in millions of tons, of the leading countries of the world in the production of coal. What two countries together have about as much coal as the United States? How does their combined population compare with the population of the United States?

FIG. 504. Standard time belts in the United States. Do the time belts represent actual sun time at every point? Why are the boundaries not straight lines?

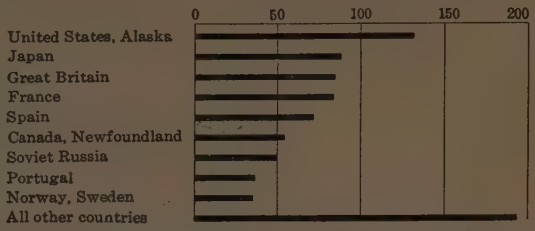

FIG. 505. Rank, in millions of dollars, of the leading countries of the world in fishery products. In what bodies of water do you think each country does its fishing? (Fig. 79.)

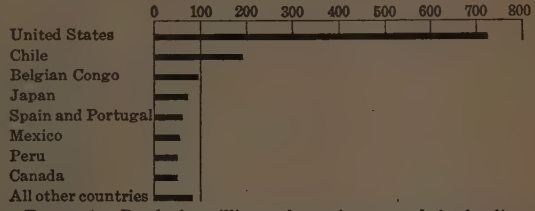

FIG. 506. Rank, in millions of metric tons, of the leading countries of the world in the production of copper. About what fraction of the world's copper comes from the United States?

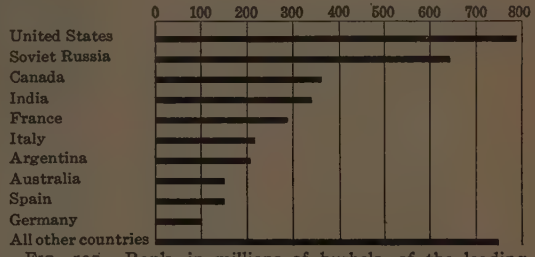

FIG. 507. Rank, in millions of bushels, of the leading countries of the world in the production of wheat. Why is the line for "all other countries" longer in the case of wheat than it is for other products? Why does the United Kingdom raise but little wheat?

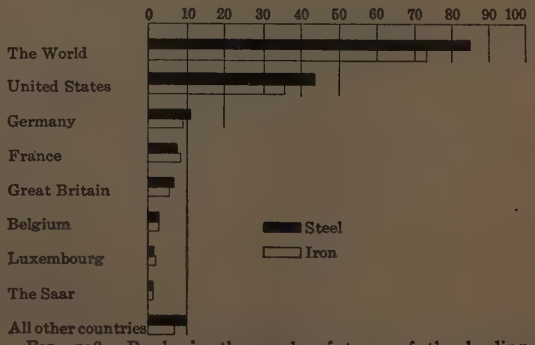

FIG. 508. Rank, in thousands of tons, of the leading countries of the world in the production of iron and steel. The figures are based on a three-year average. Why is more steel made than iron?

FIG. 509. A Political

NORTH POLE
ARCTIC OCEAN
Arctic Circle
SVALBARD
North C.
NOVAYA ZEMLYA
ICELAND
Lerwick
Lenigrad
Moskva
Kiev
Warszawa
Berlin
Bruxelles
London
Dublin
IRELAND
Lands End
Marseille
Madrid
Napoli
Wien
Budapest
Odessa
Istanbul
Tiflis
Kobenhavn
Stockholm
Oslo
Glasgow
Edinburgh
Liverpool
Manchester
Birmingham
Cardiff
Brest
Paris
Bordeaux
Lisboa
Gibraltar
Algiers
Tunis
Alexandria
Cairo
Tripoli
Benghazi
Sfax
Oran
Casablanca
Tangier
Dakar
Bathurst
Freetown
Monrovia
Accra
Lagos
Calabar
Douala
Libreville
Pointe Noire
Luanda
Benguela
Walvis Bay
Windhoek
Cape Town
C. of Good Hope
Port Elizabeth
East London
Durban
Johannesburg
Pretoria
Bulawayo
Salisbury
Beira
Lourenco Marques
Inhambane
Mozambique
Zambezi R.
Victoria Falls
Lusaka
Ndola
Elisabethville
Leopoldville
Boma
Matadi
Tanganyika L.
Nyasa L.
Dar-es-Salaam
Zanzibar
Mombasa
Nairobi
Kisumu
Kampala
Entebbe
Addis Ababa
Asmara
Khartoum
Port Sudan
Wadi Halfa
Aswan
Luxor
Cairo
Suez
Port Said
Haifa
Beirut
Damascus
Amman
Jerusalem
Baghdad
Basra
Kuwait
Bahrein
Doha
Muscat
Aden
Hodeida
Jidda
Mecca
Medina
Riyadh
Tabriz
Tehran
Isfahan
Shiraz
Bandar Abbas
Kerman
Meshed
Kabul
Kandahar
Peshawar
Lahore
Karachi
Hyderabad
Jodhpur
Delhi
Agra
Jaipur
Bombay
Poona
Ahmadabad
Surat
Nagpur
Jubbulpore
Allahabad
Lucknow
Kanpur
Calcutta
Patna
Benares
Gaya
Darjeeling
Dacca
Chittagong
Akyab
Rangoon
Mandalay
Lashio
Bhamo
Myitkyina
Moulmein
Bangkok
Chiengmai
Phnom Penh
Saigon
Hanoi
Haiphong
Singapore
Penang
Kuala Lumpur
Malacca
Johore Bahru
Medan
Palembang
Batavia
Bandoeng
Semarang
Surabaya
Macassar
Amboina
Timor
Darwin
Alice Springs
Port Hedland
Broome
Derby
Wyndham
Perth
Kalgoorlie
Adelaide
Port Augusta
Port Pirie
Broken Hill
Melbourne
Sydney
Canberra
Brisbane
Townsville
Cairns
Rockhampton
Mackay
Longreach
Charleville
Cunnamulla
Thursday I.
Torres Str.
Port Moresby
Samarai
Rabaul
Lae
Madang
Wewak
Hollandia
Biak
Manokwari
Ambon
Kupang
Dili
Flores
Sumbawa
Lombok
Bali
Java
Sumatra
Borneo
Celebes
Sulawesi
Mindanao
Davao
Zamboanga
Cebu
Iloilo
Manila
Baguio
Aparri
Legaspi
Tacloban
Dumaguete
Jolo
Sandakan
Kudat
Labuan
Brunei
Kuching
Sibu
Miri
Bintulu
Pontianak
Banjermasin
Makassar
Bandjermasin
Tarakan
Balikpapan
Samarinda
Pontianak
Hong Kong
Canton
Swatow
Amoy
Foochow
Wenchow
Ningpo
Shanghai
Nanking
Hankow
Changsha
Kiukiang
Tsingtao
Tientsin
Peking
Mukden
Harbin
Changchun
Antung
Dairen
Port Arthur
Vladivostok
Khabarovsk
Nikolaevsk
Petropavlovsk
Yakutsk
Irkutsk
Omsk
Novosibirsk
Tomsk
Semipalatinsk
Alma Ata
Frunze
Tashkent
Samarkand
Bukhara
Ashkhabad
Chardzhui
Kushka
Termez
Stalinabad
Leninabad
Fergana
Andizhan
Kokand
Aktyubinsk
Orenburg
Kuibyshev
Saratov
Volgograd
Stalingrad
Rostov
Kharkov
Kiev
Minsk
Smolensk
Moskva
Leningrad
Murmansk
Archangel
Vologda
Gorki
Kazan
Perm
Sverdlovsk
Chelyabinsk
Kurgan
Petropavlovsk
Barnaul
Novosibirsk
Omsk
Tyumen
Tobolsk
Surgut
Igarka
Dudinka
Norilsk
Yakutsk
Verkhoyansk
Ust Kamchatsk
Anadyr
Magadan
Okhotsk
Sakhalin
Hokkaido
Honshu
Kyushu
Shikoku
Tokyo
Yokohama
Nagoya
Osaka
Kobe
Kyoto
Hiroshima
Nagasaki
Fukuoka
Sapporo
Hakodate
Aomori
Sendai
Niigata
Kanazawa
Toyama
Fukui
Shizuoka
Hamamatsu
Gifu
Nagano
Matsumoto
Kofu
Utsunomiya
Maebashi
Mito
Chiba
Yokosuka
Kamakura
Nara
Osaka
Kobe
Okayama
Matsuyama
Kochi
Tokushima
Takamatsu
Kagoshima
Miyazaki
Kumamoto
Nagasaki
Sasebo
Fukuoka
Kitakyushu
Yawata
Beppu
Oita
Kagoshima
Naha
Okinawa
Iwo Jima
Chichi Jima
Haha Jima
Minami Tori Shima
Kita Iwo Jima
Minami Iwo Jima
Kita Daito Jima
Minami Daito Jima
Marcus I.
Wake I.
Midway Is.
Johnston I.
Palmyra I.
Christmas I.
Fanning I.
Canton I.
Enderbury I.
Phoenix Is.
Gilbert Is.
Ellice Is.
Tuvalu
Fiji Is.
Suva
Lautoka
Nadi
Rotuma
New Hebrides
Vila
Santo
Malekula
Efate
Erromango
Tanna
Aneityum
New Caledonia
Noumea
Loyalty Is.
Lifou
Ouvea
Maré
Norfolk I.
Kingston
Lord Howe I.
Auckland Is.
Macquarie I.
Campbell I.
Antipodes Is.
Bounty Is.
Chatham Is.
Kermadec Is.
Raoul I.
Tonga Is.
Nukualofa
Vavau
Haapai
Niuafoou
Niue I.
Samoa Is.
Apia
Pago Pago
Savaii
Upolu
Tutuila
Manua Is.
Rose I.
Swains I.
Cook Is.
Rarotonga
Aitutaki
Manihiki
Penrhyn I.
Pukapuka
Nassau I.
Suwarrow I.
Rakahanga
Manihiki
Tongareva
Palmerston I.
Aitutaki
Rarotonga
Mangaia
Atiu
Mauke
Mitiaro
Manuae
Takutea
Tubuai Is.
Rurutu
Tubuai
Raivavae
Rapa
Austral Is.
Papeete
Society Is.
Tahiti
Moorea
Raiatea
Huahine
Tahaa
Bora Bora
Maupiti
Tetiaroa
Mehetia
Tuamotu Archipelago
Hao
Fakarava
Rangiroa
Manihi
Takaroa
Takapoto
Pukarua
Reao
Pinaki
Vostok I.
Flint I.
Caroline I.
Line Is.
Christmas I.
Washington I.
Fanning I.
Palmyra I.
Jarvis I.
Howland I.
Baker I.
Phoenix Is.
Canton I.
Enderbury I.
Gilbert Is.
Ellice Is.
Tuvalu
Nauru
Ocean I.
Marshall Is.
Majuro
Jaluit
Kwajalein
Eniwetok
Ujelang
Wotje
Maloelap
Mili
Jaluit
Ailinglapalap
Namorik
Ebon
Kwajalein
Majuro
Arno
Aur
Maloelap
Wotje
Erikub
Bikini
Rongelap
Utirik
Taongi
Ailuk
Likiep
Jemo
Mili

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FIG. 510. **The population of the United States in 1790.** The first United States Census was taken in 1790, and so that is the earliest accurate population record we have. Were there any people at all in the interior of the country? Where were they? What kept almost all the population so close to the Atlantic coast? Why did the densest population, however, not extend the full length of the Atlantic seaboard? Compare this map with Figs. 83 and 104. Is there any section which is no more densely populated now than it was in 1790?

Why was the eastern coast occupied by white men before the western? Account for the two small settlements on the upper Ohio and in what is now Kentucky.

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FIG. 511. **The population of the United States in 1850.** How many years ago was this? How many years after the 1790 census? Is the densest population still in the same place? How far west has the population spread?

Were there many sections with as dense a population as they now have? How do you account for the areas of scanty population in the eastern part of the country? Try to find out from your history why the South was less densely populated than the North.

What conditions on the upper Ohio have helped the area to maintain a progressive increase in population from the first census up to the latest?

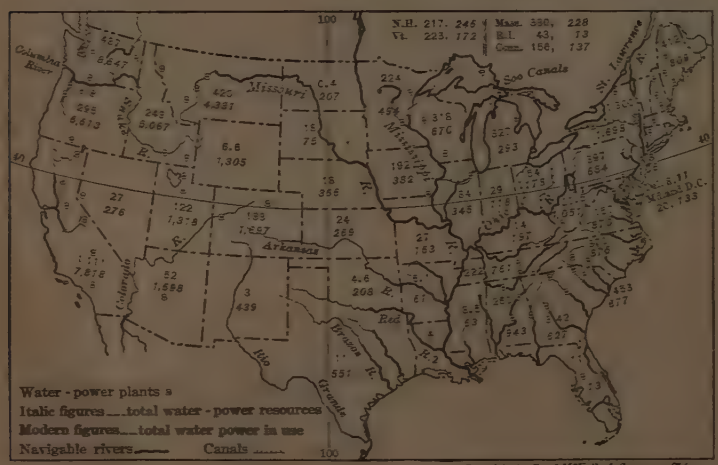
Water - power plants
Italic figures—total water - power resources
Modern figures—total water power in use
Navigable rivers——— Canals ——

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FIG. 512. **Water-power resources, navigable rivers, and canals in the United States.** Which states use more water power than their total water-power resources? Where do they get it? How can water power be carried from one state to another? Why have the western states such a small portion of their water-power resources developed? Why are there not more power plants along the Ohio, Missouri, and Mississippi rivers?

Find out how the number of canals in the United States compares with the number in Europe. Why are the large rivers in central United States not used more for transportation? If you were planning to extend the routes of water transportation in the United States, where would you build canals? Do not forget to consult the physical map (Fig. 86) for the best routes.

Area of the Oceans

(Estimated by Ravenstein)

	AREA IN SQUARE MILES
Arctic	5,285,000
Antarctic	5,734,350
Indian	28,615,660
Atlantic	34,801,400
Pacific	67,699,630

Area and Population of the Continents

(From U. S. Census Report, 1920, Vol. I)

	AREA IN SQUARE MILES	POPULATION
Australia and Oceania	3,457,000	9,000,000
Europe	3,821,000	475,000,000
Polar Regions	4,892,000	.....
South America	7,018,000	61,000,000
North America	8,040,000	145,000,000
Africa	11,605,000	140,000,000
Asia	17,052,000	890,000,000

Area and Population of the Principal Countries of the World

(From the 1931 edition of the Statesman's Year-Book and the 1930 U. S. Census)

	AREA IN SQUARE MILES	POPULATION
Afghanistan	270,000	11,000,000
Albania	10,629	1,003,068
Arabia (includes Nejd, Hejaz, Yemen)	1,000,000	7,000,000
Argentina	1,153,119	11,192,702
Austria	32,369	6,534,481
Belgium	11,755	8,060,189
Belgian Congo	918,000	8,725,679
Bhutan	18,000	300,000
Bolivia	514,155	2,911,283
Brazil	3,275,510	40,272,650
British Empire	13,367,088	449,583,000
United Kingdom England, Scotland, Wales, Northern Ireland	94,633	44,200,000
Irish Free State	27,000	2,972,000
Colonies in Europe	124	246,000
India and colonies in Asia	2,126,263	332,650,000
Dominion of Canada	3,729,665	9,787,000
Newfoundland and Labrador	162,734	270,000
Other colonies in North America	18,849	1,544,000
Union of S. Africa	472,347	6,920,000
Other colonies in Africa	3,359,484	43,468,000
Commonwealth of Australia	2,974,581	5,436,000
New Zealand and other islands in Pacific Ocean	304,336	2,359,000
British Guiana, Trinidad, Falkland Is.	97,072	754,000
Bulgaria	39,814	5,596,800
Chile	290,119	4,264,819
China, Republic of	4,279,170	439,759,380
China	1,534,420	411,356,367
Sinkiang	550,340	2,510,579
Manchuria	363,610	22,083,434
Mongolia	1,367,600	1,800,000
Tibet	463,200	2,000,000
Colombia	447,536	7,851,000
Costa Rica	23,000	472,025
Cuba	44,164	3,607,919
Czechoslovakia	54,207	14,608,412
Denmark, Kingdom of	859,039	3,448,910
Denmark	16,568	3,434,555
Greenland	842,471	14,355
Dominican Republic	19,332	1,200,000
Ecuador	171,287	1,785,800
Egypt	383,000	14,217,864
Estonia	18,354	1,114,861
Ethiopia (Abyssinia)	350,000	10,000,000
Finland	132,589	3,634,047
France, Republic of	4,135,311	94,528,370
France	212,659	39,209,518
Indo-China and other possessions in Asia	317,114	22,972,460
Algeria and other possessions in Africa	3,539,364	31,769,121
French Guiana and possessions in North America	33,906	489,371
Islands in Pacific Ocean	10,068	87,900
Germany	181,723	63,178,619
Greece	49,912	6,204,684
Guatemala	42,353	2,004,900
Haiti	10,204	2,300,200
Honduras	44,275	859,761
Hungary	35,875	8,683,740
Iceland	39,709	106,350
Iraq	177,148	2,849,282
Italy, Kingdom of	900,450	43,617,699
Italy	119,710	41,173,000
Aegean Islands	986	122,100
Dependencies in Africa	779,754	2,322,509
Japan, Empire of	266,627	84,780,372
Japan proper	152,357	59,736,822
Chosen (Korea)	84,949	19,522,945
Taiwan, Pescadores	13,889	3,993,408
Karafuto	13,934	203,754
Leased territory and mandates	1,498	1,323,443
Latvia	24,500	1,900,045
Liberia	43,000	2,500,000
Liechtenstein	65	10,213
Lithuania	21,489	2,340,038
Luxembourg	999	222,092
Mexico	757,907	16,404,030
Monaco	8	24,927
Morocco[1]	218,525	5,300,146
Nepal	54,000	5,600,000
Netherlands, Kingdom of The	800,609	60,808,004
Netherlands	12,603	7,832,175
Dutch East Indies	733,715	52,824,569
Dutch West Indies	54,291	151,350
Nicaragua	51,660	750,000
Norway, Kingdom of	150,986	2,891,522
Norway	125,986	2,890,000
Svalbard (Spitsberger)	25,000	1,522
Oman	82,000	500,000
Panama	32,380	467,459
Paraguay	61,647	843,905
Persia	628,000	[illegible]
Peru	532,047	6,147,000
Poland	149,058	27,176,717
Portugal, Republic of	831,901	13,816,106
Portugal	35,490	6,032,991
Dependencies in Africa	787,608	6,603,910
Dependencies in Asia	8,803	1,179,205
Romania	122,282	17,393,149
Salvador	13,176	1,722,579
San Marino	38	13,013
Siam	200,149	11,506,207
Spain, Republic of	325,303	23,545,195
Spain	190,607	22,760,854
Colonies in Africa	128,696	784,341
Sweden	173,246	6,120,080
Switzerland	15,940	4,067,305
Turkey, Republic of	294,416	13,648,270
Union of Socialist Soviet Republics	8,241,921	147,013,609
Russian S.F.S.R.	7,626,717	100,857,985
Ukraine S. S. R.	174,201	29,020,304
Transcaucasian S. S. R.	71,255	5,850,692
White Russian S.S.R.	48,751	4,983,884
Uzbek S. S. R. and Turkmen S. S. R.	264,389	5,473,344
Tadzhik S. S. R.	56,608	827,400
United States, Republic of	3,738,395	137,008,435
Continental United States	3,026,789	122,775,046
Alaska	586,400	59,278
American Samoa	76	10,055
Guam	206	18,509
Hawaii	6,407	368,336
Panama Canal Zone	549	39,467
Philippine Islands	114,400	12,082,366
Porto Rico	3,435	1,543,913
Virgin Islands	133	22,012
Military and naval service abroad	.....	89,453
Uruguay	72,153	2,036,884
Venezuela	393,874	3,053,497
Yugoslavia	96,134	13,290,000

[1]Morocco figures include French Zone, Spanish Zone, and Tangier Zone.

Some Important Cities of the World

(From latest statistics available)

CITY	POPULATION
Addis Ababa, Ethiopia	65,000
Adelaide, Australia	324,808
Ahmadabad, India	274,007
Alep (Aleppo), Syria	177,313
Alexandria, Egypt	573,067
Alger (Algiers), Algeria	226,228
Amsterdam, Netherlands	749,459
Ankara (Angora), Turkey	74,553
Anvers (Antwerp), Belgium	299,290
Asmara, Eritrea	18,509
Asunción, Paraguay	142,360
Athenai (Athens), Greece	452,919
Auckland, New Zealand	253,330
Baghdad, Iraq	250,000
Baile Atha Cliath (Dublin), Irish Free State	418,981
Baku, U. S. S. R.	452,000
Bamako, French Sudan	17,286
Bangkok, Siam	550,000
Barcelona, Spain	775,272
Barranquilla, Colombia	136,974
Basle, Switzerland	147,398
Batavia, Java	290,498
Belém (Para), Brazil	279,491
Belfast, Northern Ireland	445,551
Belize, British Honduras	12,661
Bengasi (Benghazi), Libya	33,704
Beograd (Belgrade), Yugoslavia	225,000
Bergen, Norway	91,443
Berlin, Germany	4,024,754
Berne, Switzerland	117,597
Beyrouth (Beirut), Syria	134,655
Birmingham, England	968,500
Bogotá, Colombia	235,421
Bologna, Italy	245,940
Bombay, India	1,175,914
Bordeaux, France	256,926
Bradford, England	294,605
Breslau, Germany	599,770
Bridgetown, Barbados	13,486
Brisbane, Australia	328,631
Bristol, England	391,245
Brno (Brünn), Czechoslovakia	221,753
Bruxelles (Brussels), Belgium	833,345
Bucuresti (Bucharest), Romania	866,000
Budapest, Hungary	1,002,599
Buenos Aires, Argentina	2,116,284
Bukhara, U. S. S. R.	75,000
Cairo, Egypt	1,064,567
Calcutta, India	1,327,547
Calgary, Canada	65,533
Cali, Colombia	124,557
Callao, Peru	77,000
Canton, China	812,241
Cape Town, U. of S. A.	239,455
Caracas, Venezuela	135,253
Cardiff, Wales	224,000
Catania, Italy	283,368
Cayenne, French Guiana	13,936
Changsha, China	606,972
Chisinău (Kishinev), Romania	135,000
Cholon, French Indo-China	103,400
Christchurch, New Zealand	126,040
Chungking, China	635,000
Cochabamba, Bolivia	36,196
Colombo, Ceylon	244,163
Colon, Panama	31,940
Córdoba, Argentina	239,600
Dakar, Senegal	33,697
Damas (Damascus), Syria	193,912
Danzig, Free City of	235,237
Dawson, Canada	975
Debreczen, Hungary	117,410
Delhi, India	304,420
Djibouti (Jibuti), Fr. Somaliland	9,414
Dortmund, Germany	525,837
Dresden, Germany	629,157
Duisburg, Germany	421,217
Durres (Durazzo), Albania	8,000
Düsseldorf, Germany	464,543
Edinburgh, Scotland	427,500
Erivan, U. S. S. R.	75,000
Essen, Germany	629,564
Fez, Morocco	81,172
Firenze (Florence), Italy	318,610
Foochow, China	388,164
Fortaleza, Brazil	123,706
Fort de France, Martinique	43,338
Frankfurt-am-Main, Germany	540,115
Fusan, Chosen	116,207
Gand (Ghent), Belgium	170,095
Geneva, Switzerland	143,352
Genova (Genoa), Italy	625,662
Georgetown, British Guiana	57,560
Gibraltar, Europe	16,799

Important Cities — *Continued*

CITY	POPULATION
Glasgow, Scotland	1,076,100
Göteborg, Sweden	241,561
Graz, Austria	152,706
Guadalajara, Mexico	143,376
Guatemala, Guatemala	120,707*
Guayaquil, Ecuador	100,000
Habana, Cuba	581,076
Halifax, Canada	64,000
Hamburg (Hamburg), Germany	1,079,126
Hamilton, Canada	134,566
Hangchow, China	426,916
Hankow, China	717,993
Hannover, Germany	425,274
Hanoi, French Indo-China	129,608
Harbin, Manchuria	252,988
Helsinki (Helsingfors), Finland	234,096
Herat, Afghanistan	121,000
Hobart, Tasmania	57,500
Hong Kong, China	1,143,510
Hull, England	307,500
Hyderabad, India	404,187
Isfahan, Persia	100,000
Istanbul (Constantinople), Turkey	690,857
Izmir (Smyrna), Turkey	153,924
Jidda, Hejaz	25,000
Johannesburg, U. of S. A.	307,036
Kabul, Afghanistan	100,000
Karachi, India	216,883
Katmandu, Nepal	80,000
Kaunas (Kovno), Lithuania	96,535
Kharkov, U. S. S. R.	417,186
Kiev, U. S. S. R.	513,789
Kingston, Jamaica	62,707
Klaipeda (Memel), Lithuania	36,633
Kobe, Japan	644,212
København (Copenhagen), Denmark	731,496
Köln (Cologne), Germany	700,222
Koweit, Koweit	30,000
Krakow (Cracow), Poland	210,532
Kyoto, Japan	679,963
Lahore, India	281,781
La Paz, Bolivia	146,930
La Plata, Argentina	165,813
Leeds, England	478,500
Leipzig, Germany	679,159
Leningrad (St. Petersburg), U.S.S.R.	1,614,008
Leopoldville, Belgian Congo	6,000
Lhasa, Tibet	20,000
Liége, Belgium	168,280
Liepaja (Libau), Latvia	57,238
Lille, France	201,921
Lima, Peru	265,000
Linz, Austria	102,081
Lisboa (Lisbon), Portugal	587,334
Liverpool, England	869,500
Loando, São Paulo de, Angola	20,000
Lódź, Poland	606,980
Lomé, Togo	8,000
London, England	7,900,480
Lourenço Marques, Mozambique	37,311
Lucknow, India	240,566
Lwow (Lemberg), Poland	219,725
Lyon, France	570,840
Madras, India	526,911
Madrid, Spain	825,471
Magdeburg, Germany	297,020
Managua, Nicaragua	32,536*
Manaos (Manáos), Brazil	83,736
Manchester, England	746,500
Mannheim, Germany	249,705
Maracaibo, Venezuela	74,767
Marrakech, Morocco	149,263
Marseille, France	652,196
Maskat, Oman	20,000
Mecca, Hejaz	85,000
Medellín, Colombia	129,044
Medina, Hejaz	30,000
Melbourne, Australia	1,018,200
Mérida, Mexico	79,225
Meshed, Persia	85,000
México City, Mexico	968,443
Milano (Milan), Italy	973,299
Mogadiscio, Italian Somaliland	28,000
Monrovia, Liberia	10,000
Monte Carlo, Monaco	11,055
Monterrey, Mexico	88,458
Montevideo, Uruguay	468,634
Montreal, Canada	1,098,400
Moskva (Moscow), U. S. S. R.	2,412,300
Mosul, Iraq	350,378
München (Munich), Germany	683,636
Nagoya, Japan	768,558
Nanking, China	522,696
Napoli (Naples), Italy	980,338
Nizhni Novgorod, U. S. S. R.	185,274
Nottingham, England	266,600
Odessa, U. S. S. R.	420,888
Omsk, U. S. S. R.	161,475
Oran, Algeria	150,301
Osaka, Japan	2,114,804
Oslo, Norway	258,483
Ottawa, Canada	165,987
Palermo, Italy	446,132
Panama, Panama	60,000
Paramaribo, Dutch Guiana	46,953
Paris, France	2,871,429
Peiping (Peking), China	1,297,718
Peiraiev (Piraeus), Greece	217,594
Perth, Australia	202,888
Plovdiv (Philippopolis), Bulgaria	84,655
Plymouth, England	199,000
Port au Prince, Haiti	100,000
Porto (Oporto), Portugal	215,625
Porto Alegre, Brazil	273,376
Port of Spain, Trinidad	67,877
Porto Novo, Dahomey	23,014
Port Said, Egypt	104,603
Portsmouth, England	242,000
Potosí, Bolivia	34,083
Poznan (Pozen), Poland	248,000
Praha (Prague), Czechoslovakia	676,663
Puebla, Mexico	95,535
Quebec, Canada	135,000
Quito, Ecuador	82,000
Rangoon, India	341,962
Recife (Pernambuco), Brazil	340,543
Regina, Canada	66,906
Reykjavik, Iceland	26,428
Rhodes, Rhodes	25,000
Riga, Latvia	377,917
Rio de Janeiro, Brazil	1,468,621
Riyadh, Nejd	30,000
Roma (Rome), Italy	971,645*
Rosario, Argentina	265,000
Rostov na Donu, U. S. S. R.	308,284
Rotterdam, Netherlands	582,507
Saigon, French Indo-China	123,800
Saint John, Canada	47,166
St. Johns, Newfoundland	41,157
St. Louis, Senegal	19,746
Samarkand, U. S. S. R.	105,206
Sana, Yemen	22,500
San José, Costa Rica	62,037
San Luis Potosí, Mexico	57,353
San Salvador, Salvador	95,692
Santiago, Chile	538,144
Santiago de Cuba, Cuba	48,500
Santo Domingo, Dominican Rep.	30,957
São Paulo, Brazil	879,788
São Salvador (Bahia), Brazil	328,898
Saratov, U. S. S. R.	215,369
Seoul, Chosen	321,848
Sevilla (Seville), Spain	217,924
s'Gravenhage (The Hague), Netherlands	432,686
Shanghai, China	2,674,447
Sheffield, England	518,000
Shkodra, Albania	29,202
Singapore, Straits Settlements	559,270
Sofija (Sofia), Bulgaria	213,002
Stanley, Falkand Islands	1,000
Stettin, Germany	254,466
Stockholm, Sweden	486,672
Stuttgart, Germany	343,048
Subotica, Yugoslavia	104,000
Sucre, Bolivia	34,577
Swansea, Wales	162,700
Sydney, Australia	1,238,660
Sydproven, Greenland	901
Szeged, Hungary	135,141
Tabriz, Persia	180,000
Takao, Taiwan	195,555
Tallinn (Revel), Estonia	130,000
Tananarive, Madagascar	70,847
Tangier, Morocco	60,000
Tashkent, U. S. S. R.	323,613
Tegucigalpa, Honduras	40,049
Tehran, Persia	350,000
Thessalonikē (Salonika), Greece	236,524
Tienstin, China	1,388,747
Tiflis, U. S. S. R.	292,973
Tirana, Albania	30,806
Tokyo, Japan	1,995,567
Torino (Turin), Italy	597,715
Toronto, Canada	600,645
Trieste, Italy	253,291
Tripoli, Libya	60,000
Tsingtao, China	330,461
Tunis, Tunisia	185,996
Turku (Åbo), Finland	65,291
Valencia, Spain	272,129
Valparaiso, Chile	191,494
Vancouver, Canada	227,631
Varna, Bulgaria	60,563
Vatican City	639
Venezia (Venice), Italy	260,056
Veracruz, Mexico	54,225
Victoria, Hong Kong	577,500
Vladivostok, U. S. S. R.	107,977
Warszawa (Warsaw), Poland	1,109,478
Wellington, New Zealand	138,510
Wenchow, China	678,376
Westham, England	307,600
Wien (Vienna), Austria	1,842,763
Wilno (Vilna), Poland	201,925
Winnipeg, Canada	336,202
Wuppertel, Germany	405,515
Yokohama, Japan	518,002
Zagreb (Agram), Yugoslavia	150,000
Zurich, Switzerland	249,130

*Destroyed by earthquake, 1930.

*Preliminary figures, 1931 census.

Principal Rivers of the World

NORTH AMERICA

(Latest data available)

	APPROXIMATE LENGTH IN MILES	APPROXIMATE AREA DRAINED IN SQUARE MILES
Missouri-Mississippi	4,221	1,238,642
Yukon	2,300	440,000
Colorado	2,000	267,000
Rio Grande	1,800	145,200
Columbia	1,400	260,000
Saskatchewan-Nelson	1,392	360,000
Athabaska-Mackenzie	1,100	677,000
St. Lawrence	1,034	297,000

SOUTH AMERICA

Amazon	3,900	2,320,000
Plata-Paraná	2,170	1,200,000
São Francisco	1,800	397,600
Orinoco	1,550	365,000

EUROPE

Volga	2,325	563,300
Danube	1,800	315,000
Dnieper	1,334	202,200
Don	1,153	166,130
Northern Dvina	1,100	134,000
Dniester	853	16,510
Rhine	810	86,600
Elbe	720	55,340
Vistula	652	73,000
Tagus	566	31,864
Oder	552	43,300
Loire	453	46,756
Rhone	504	38,000
Seine	425	30,028
Po	418	26,800

ASIA

Ob	3,200	1,150,870
Yangtse	3,100	700,000
Amur	2,900	787,000
Yenisei	2,800	792,300
Hwang	2,700	387,150
Lena	2,660	908,980
Mekong	2,600	350,000
Indus	2,000	360,050
Brahmaputra	1,800	360,000
Ganges	1,455	397,300

AFRICA

Nile	4,000	1,620,000
Congo	2,900	1,000,000
Niger	2,600	780,000
Zambezi	1,600	550,000

AUSTRALIA

Darling	1,210	198,000
Murray	1,100	270,000

Principal Lakes of the World

NORTH AMERICA

	AREA IN SQ. MILES	ALTITUDE IN FEET
Superior	31,810	602
Huron	23,010	581
Michigan	22,400	581
Great Bear	14,000	391
Erie	9,940	572
Winnipeg	9,400	710
Ontario	7,540	246
Great Slave	7,100	520
Nicaragua	2,975	106
Great Salt[1]	2,560	4,218

[1]Salt.

SOUTH AMERICA

Titicaca	3,261	12,500

EUROPE

Ladoga	7,000	55

ASIA

Caspian Sea[1]	69,383	862
Lake Aral[1]	26,166	160
Baikal	13,197	1,562
Balkhash	7,115	899
Dead Sea[1]	353	1,293[2]

[1]Salt. [2]Below sea level.

AFRICA

Victoria	26,828	3,737
Tanganyika	12,355	2,565
Nyasa	10,231	1,568
Chad	10,400[1]	850

[1]Variable and gradually shrinking.

Principal Mountains of the World

NORTH AMERICA

McKinley	Alaska	20,300
Logan	Yukon	19,850
Hayes	Alaska	18,800
Orizaba	Mexico	18,701
St. Elias	Alaska-Yukon	18,008
Popocatepetl	Mexico	17,880
Foraker	Alaska	17,000
Sanford	Alaska	16,210
Blackburn	Alaska	16,140
Toluca, Nevada de	Mexico	15,026
Hubbard	Alaska-Yukon	14,950
Whitney	California	14,496
Elbert	Colorado	14,420
Rainier	Washington	14,408
Massive	Colorado	14,404
Blanca	Colorado	14,390
Longs Peak	Colorado	14,255
Shasta	California	14,161
Pikes Peak	Colorado	14,109

SOUTH AMERICA

Aconcagua	Argentina	22,835
Coropuna	Peru	22,802
Ojos de Salado	Chile-Argentina	22,539
Cerro Pissis	Argentina	22,244
Llullaillaco	Chile-Argentina	22,146
Huascaran	Peru	22,050
Mercedario	Argentina	21,884
Incahuasi	Chile-Argentina	21,686
Tupungato	Chile	21,490
Sajama	Bolivia	21,391
Nevado de Cachi	Argentina	21,325
Illampú (Sorata)	Bolivia	21,276
Ilimani	Bolivia	21,184
Chimborazo	Ecuador	20,702
Copiapó (Cerro del Azufre)	Chile	19,941
Licancabur	Chile	19,455
Cotopaxi	Ecuador	19,347
Misti	Peru	19,167

EUROPE

Elbrus	Georgia	18,468
Mont Blanc	France	15,781
Monte Rosa	Swiss-Italian frontier	15,217
Pic d' Aneto	Spain	11,169
Etna	Sicily	10,758
Galdhopig	Norway	8,334
Telpos	U. S. S. R.	5,540
Hekla	Iceland	5,105
Ben Nevis	Scotland	4,406
Vesuvius	Italy	4,012
Snowdon	Wales	3,560

ASIA

Everest	Nepal-Tibet	29,002
Godwin Austen	India	28,265
Kinchinjunga	Nepal	28,146
Mustag Ata	Sinkiang	24,480
Demavend	Persia	18,606
Ararat	Armenia	16,025
Fujiyama (Fujisan)	Japan	12,395
Hermon	Syria	9,052

AFRICA

Kilimanjaro	Tanganyika	19,456
Kenya	Kenya	17,040
Ras Dashan	Ethiopia	15,158
Tizi-n-Tamjurt	Morocco	14,764
Elgon	Uganda	14,584
Mongo Ma Loba	Cameroons	13,353
Mont aux Sources	Natal	11,000

OCEANIA

Carstensz	Dutch New Guinea	15,064
Mauna Kea	Hawaiian Islands	13,853
Kinibalu	Borneo	13,698
Cook	New Zealand	12,349
Kosciusko	Australia	7,328

Principal Seaports of the World[1]

(From Research Div. U. S. Dept. of Commerce)

PORT	COUNTRY	TOTAL COMMERCE
New York	United States	$3,719,962,000
London[2]	England	3,433,149,000
Hambourck[3]	Germany	3,038,746,000
Liverpool[2]	England	2,339,256,000
Anvers(Antwerp)	Belgium	1,374,588,000
Singapore	Str. Settlements	965,291,000
Calcutta	India	766,237,000
Galveston	United States	713,147,000
Kobe	Japan	700,708,000
Marseille	France	664,326,000
Shanghai	China	652,000,000
Yokohama	Japan	629,480,000
Hong Kong	China	599,963,000
New Orleans	United States	587,620,000
Sydney	Australia	553,111,000
Bombay	India	535,085,000
Hull[2]	England	527,336,000
Le Havre	France	527,232,000
Alexandria	Egypt	475,703,000
Montreal	Canada	473,563,000
Manchester[2]	England	459,066,000
Southampton[2]	England	438,720,000
Santos	Brazil	427,949,000
San Francisco	United States	399,540,060
Seattle	United States	379,841,000
Glasgow	Scotland	376,061,000
Melbourne	Australia	369,448,000
Buffalo	United States	368,866,000
Osaka	Japan	328,193,000
Boston	United States	321,082,000
Philadelphia	United States	304,116,000
Dunkirk	France	294,459,000
Cape Town	Union of S. A.	264,169,000
Vancouver	Canada	259,008,000
Toronto	Canada	257,294,000
Rio de Janeiro	Brazil	246,611,000
Habana	Cuba	245,344,000
Harwich[2]	England	237,741,000
Rangoon	India	220,808,000
Bordeaux	France	211,446,000
Baltimore	United States	209,000,000
Durban	Union of S. A.	198,036,000
Karachi	India	195,625,000
Manila	Philippine Is.	194,711,000
Bristol[2]	England	183,147,000
Grimsby[2]	England	171,848,000
Montevideo	Uruguay	150,517,000
Wellington	New Zealand	148,650,000
Auckland	New Zealand	140,350,000
Tientsin	China	138,187,000
Tampico	Mexico	134,551,000
Port Arthur	Canada	130,114,000
Cardiff[2]	Wales	129,707,000
Brisbane	Australia	127,226,000
Leith[2]	England	125,582,000
Port Elizabeth	Union of S. A.	125,516,000
Port Adelaide[4]	Australia	112,467,000
Fremantle[5]	Australia	101,617,000
Helsinki (Helsingfors)	Finland	94,804,000
Barranquilla	Colombia	92,856,000
Veracruz	Mexico	90,990,000
Lisboa (Lisbon)	Portugal	90,369,000
Valparaíso	Chile	87,586,000
Canton	China	80,529,000
Callao	Peru	72,386,000
Antofagasta	Chile	67,959,000
Belfast[2]	N. Ireland	67,179,000
Porto (Oporto)	Portugal	59,454,000
Halifax	Canada	55,757,000
Cartagena	Colombia	55,371,000
Buenaventura	Colombia	53,016,000
Iquique	Chile	50,565,000
São Salvador (Bahia)	Brazil	48,267,000
Talara	Peru	45,422,000

[1]As the Tyne ports of England are grouped no statistics are given. All figures are for 1927 or 1928. No figures available for notable ports omitted from list.

[2]The figures for this port include those of small adjoining ports.

[3]Figures are for sea-borne commerce only.

[4]Figures for Adelaide included.

[5]Figures for Perth included.

Some Ocean Distances

(After U. S. Hydrographic Office)

NORTH AMERICA

PORTS	NAUTICAL MILES
Boston to Marseille	3,716
Boston to Bordeaux	3,064
Boston to New Orleans	1,940
New York to Liverpool	3,107
New York to Le Havre	3,293
New York to Bordeaux	3,318
New York to Rio de Janeiro	4,770
New York to Buenos Aires	5,871
San Francisco to Stockholm	9,185[1]
San Francisco to Magallanes (Punta Arenas)	6,193
Seattle to Honolulu	2,409
Seattle to Nome	2,288
New Orleans to San Diego	4,276[1]
Quebec to Glasgow	2,558
Quebec to Liverpool	2,647
Habana to Liverpool	4,146
Habana to New York	1,227
Panama to Honolulu	4,685
Colon to New York	1,974
San Juan to Liverpool	3,594

SOUTH AMERICA

Buenos Aires to Liverpool	6,233
Rio de Janeiro to Liverpool	5,158
Rio de Janeiro to Cape Town	3,273
Montevideo to Cape Town	3,608
Callao to Honolulu	5,161
Guayaquil to Hambourck	5,906[1]
Valparaíso to Honolulu	5,919
Magallanes (Punta Arenas) to Panama	3,943
Magallanes (Punta Arenas) to Le Havre	7,235

EUROPE

Liverpool to Cape Town	6,080
Liverpool to Melbourne	12,519[1]
Liverpool to Melbourne	11,084[2]
Southampton to Boston	2,944
Southampton to New Orleans	4,622
London to Hong Kong	9,749[2]
London to Melbourne	12,734[1]
London to New York	3,310
London to Gibraltar	1,351
Brest to Boston	2,806
Hambourck to Rio de Janeiro	5,518
Hambourck to Valparaíso	7,729[1]
København (Copenhagen) to Boston	3,719
Marseille to Alexandria	1,415
Venezia (Venice) to Port Said	1,325

AFRICA

Cape Town to Singapore	5,631
Cape Town to Adelaide	5,794
Cape Town to Wellington	6,540
Durban to Tampico	8,298
Suez to Aden	1,310
Zanzibar to Bombay	2,538

ASIA

Shanghai to San Francisco	5,505
Shanghai to Honolulu	4,330
Singapore to Manila	1,370
Singapore to Yokohama	2,905
Singapore to Hong Kong	1,454
Yokohama to Panama	7,682
Yokohama to San Francisco	4,536
Yokohama to Seattle	4,255
Yokohama to Sydney	4,375
Aden to Colombo	2,006
Aden to Bombay	1,660
Colombo to Singapore	1,585
Colombo to Batavia	1,857
Manila to San Francisco	6,221
Manila to Honolulu	4,767
Calcutta to London	7,974[2]
Calcutta to Marseille	6,214[2]
Hong Kong to San Francisco	6,049

AUSTRALIA

Wellington to Panama	6,505
Wellington to Valparaíso	5,064
Melbourne to Cape Town	6,077
Sydney to Honolulu	4,429
Sydney to Hong Kong	4,497
Sydney to Panama	7,674
Auckland to San Francisco	5,680

[1]By way of Panama Canal. [2]By way Suez Canal.

Areas and Population of the United States and Its Possessions

(From U. S. Federal Census, 1930)

STATES	DATES OF ADMISSION	LAND SURFACE	WATER SURFACE[1]	POPULATION
Alabama	Dec. 14, 1819	51,279	719	2,646,248
Arizona	Feb. 14, 1912	113,810	146	435,573
Arkansas	June 15, 1836	52,525	810	1,854,482
California	Sept. 9, 1850	155,652	2,645	5,677,251
Colorado	Aug. 1, 1876	103,658	290	1,035,791
Connecticut	Jan. 9, 1788	4,820	145	1,606,903
Delaware	Dec. 7, 1787	1,965	405	238,380
Florida	March 3, 1845	54,861	3,805	1,468,211
Georgia	Jan. 2, 1788	58,725	540	2,908,506
Idaho	July 3, 1890	83,354	534	445,032
Illinois	Dec. 3, 1818	56,043	622	7,630,654
Indiana	Dec. 11, 1816	36,045	309	3,238,503
Iowa	Dec. 28, 1846	55,586	561	2,470,939
Kansas	Jan. 29, 1861	81,774	384	1,880,099
Kentucky	June 1, 1792	40,181	417	2,614,589
Louisiana	April 30, 1812	45,409	3,097	2,101,593
Maine	March 15, 1820	29,895	3,145	797,423
Maryland	April 28, 1788	9,941	2,386	1,631,526
Massachusetts	Feb. 6, 1788	8,039	227	4,249,614
Michigan	Jan. 26, 1837	57,480	500	4,842,325
Minnesota	May 11, 1858	80,858	3,824	2,563,953
Mississippi	Dec. 10, 1817	46,362	503	2,009,821
Missouri	Aug. 10, 1821	68,727	693	3,629,367
Montana	Nov. 8, 1889	146,131	866	537,606
Nebraska	March 1, 1867	76,808	712	1,377,963
Nevada	Oct. 31, 1864	109,821	869	91,058
New Hampshire	June 21, 1788	9,031	310	465,293
New Jersey	Dec. 18, 1787	7,514	710	4,041,334
New Mexico	Jan. 6, 1912	122,503	131	423,317
New York	July 26, 1788	47,654	1,550	12,588,066
North Carolina	Nov. 21, 1789	48,740	3,686	3,170,276
North Dakota	Nov. 2, 1889	70,183	654	680,845
Ohio	Feb. 19, 1803	40,740	300	6,646,697
Oklahoma	Nov. 16, 1907	69,414	643	2,396,040
Oregon	Feb. 14, 1859	95,607	1,092	953,786
Pennsylvania	Dec. 12, 1787	44,832	294	9,631,350
Rhode Island	May 29, 1790	1,067	181	687,497
South Carolina	May 23, 1788	30,495	494	1,738,765
South Dakota	Nov. 2, 1889	76,868	747	692,849
Tennessee	June 1, 1796	41,687	335	2,616,556
Texas	Dec. 29, 1845	262,398	3,498	5,824,715
Utah	Jan. 4, 1896	82,184	2,806	507,847
Vermont	March 4, 1791	9,124	440	359,611
Virginia	June 25, 1788	40,262	2,365	2,421,851
Washington	Nov. 11, 1889	66,836	2,291	1,563,396
West Virginia	June 19, 1863	24,022	148	1,729,205
Wisconsin	May 29, 1848	55,256	810	2,939,006
Wyoming	July 10, 1890	97,548	366	225,565
TERRITORIES	**ORGANIZED**			
Alaska	July 27, 1868	586,400[2]	....	59,278
District of Columbia	March 3, 1791	62[2]	....	486,869
Hawaii	June 14, 1900	6,407[2]	....	368,336
OTHER DEPENDENCIES	**ACQUIRED**			
Guam	Feb. 6, 1899	206[2]	....	18,509
Panama Canal Zone	Feb. 23, 1904	549[2]	....	39,467
Philippines	Feb. 6, 1899	114,400[2]	....	12,082,366
Porto Rico	Feb. 6, 1899	3,435[2]	....	1,543,913
American Samoa	Feb. 16, 1900	76[2]	....	10,055
Virgin Islands	Feb. 19, 1917	133[2]	....	22,012

[1]1930 Census figures not available [2]Gross area (land and water)

Capitals and Largest Cities of the United States and Dependencies[1]

(All capitals are starred)

	POPULATION
Aberdeen, S. Dak.	16,465
Agaña, Guam	8,690
Akron, Ohio	255,040
*Albany, N. Y.	127,412
Albuquerque, N. Mex.	26,570
Allentown, Pa.	92,563
Altoona, Pa.	82,054
Amarillo, Texas	43,132
Anderson, Ind.	39,804
*Annapolis, Md.	12,531
Asheville, N. C.	50,193
*Atlanta, Ga.	270,366
Atlantic City, N. J.	66,198
Augusta, Ga.	60,342
*Augusta, Me.	17,198
Aurora, Ill.	46,589
*Austin, Texas	53,120
Baltimore, Md.	804,874
Bangor, Me.	28,749
Barre, Vt.	11,307
*Baton Rouge, La.	30,729
Bay City, Mich.	47,355
Bayonne, N. J.	88,979
Beaumont, Texas	57,732
Bellingham, Wash.	30,823
Berkeley, Calif.	82,109
Berlin, N. H.	20,018
Berwyn, Ill.	47,027
Bethlehem, Pa.	57,892
Billings, Mont.	16,380
Binghamton, N. Y.	76,662
Birmingham, Ala.	259,678
Bisbee, Ariz.	8,023
*Bismarck, N. Dak.	11,090
*Boise, Idaho	21,544
*Boston, Mass.	781,188
Bridgeport, Conn.	146,716
Brockton, Mass.	63,797
Buffalo, N. Y.	573,076
Burlington, Vt.	24,789
Butte, Mont.	39,532
Cambridge, Mass.	113,643
Camden, N. J.	118,700
Canton, Ohio	104,906
*Carson City, Nev.	1,596
Casper, Wyo.	16,619
Cebu, Philippine Is.	86,132
Cedar Rapids, Iowa	56,097
Charleston, S. C.	62,265
*Charleston, W. Va.	60,408
Charlotte, N. C.	82,675
Chattanooga, Tenn.	119,798
Chester, Pa.	59,164
*Cheyenne, Wyo.	17,361
Chicago, Ill.	3,376,438
Cicero, Ill.	66,602
Cincinnati, Ohio	451,160
Cleveland, Ohio	900,429
Cleveland Heights, Ohio	50,945
Colon, Canal Zone	31,203[1]
Colorado Springs, Colo.	33,237
*Columbia, S. C.	51,581
Columbus, Ga.	43,131
*Columbus, Ohio	290,564
*Concord, N. H.	25,228
Council Bluffs, Iowa	42,048
Covington, Ky.	65,252
Cranston, R. I.	42,911
Cumberland, Md.	37,747
Dallas, Texas	260,475
Davenport, Iowa	60,751
Dayton, Ohio	200,982
Dearborn, Mich.	50,358
Decatur, Ill.	57,510
*Denver, Colo.	287,861
*Des Moines, Iowa	142,559
Detroit, Mich.	1,568,662
Douglas, Ariz.	9,828
*Dover, Del.	4,800
Dover, N. H.	13,573
Dubuque, Iowa	41,679
Duluth, Minn.	101,463
Durham, N. C.	52,037
East Chicago, Ind.	54,784
East Orange, N. J.	68,020
East St. Louis, Ill.	74,347
Elizabeth, N. J.	114,589
Elmira, N. Y.	47,397
El Paso, Texas	102,421
Enid, Okla.	26,399
Erie, Pa.	115,967
Evanston, Ill.	63,338
Evansville, Ind.	102,249
Everett, Mass.	48,424
Everett, Wash.	30,567
Fall River, Mass.	115,274
Fargo, N. Dak.	28,619
Flint, Mich.	156,492
Fort Smith, Ark.	31,429
Fort Wayne, Ind.	114,946
Fort Worth, Texas	163,447
*Frankfort, Ky.	11,626
Fresno, Calif.	52,513
Galveston, Texas	52,938
Gary, Ind.	100,426
Glendale, Calif.	62,736
Grand Forks, N. Dak.	17,112
Grand Rapids, Mich.	168,502
Great Falls, Mont.	28,822
Greensboro, N. C.	53,569
Greenville, S. C.	29,154
Hagerstown, Md.	30,861
Hamilton, Ohio	52,176
Hammond, Ind.	64,560
Hamtramck, Mich.	56,268
*Harrisburg, Pa.	80,339
*Hartford, Conn.	164,072
Hattiesburg, Miss.	18,601
Haverhill, Mass.	48,710
*Helena, Mont.	11,803
Highland Park, Mich.	52,959
High Point, N. C.	30,745
Hilo, Hawaii	19,468
Hoboken, N. J.	59,261
Holyoke, Mass.	56,537
Honolulu, Hawaii	137,582
Hot Springs, Ark.	20,238
Houston, Texas	292,352
Huntington, W. Va.	75,572
Huron, S. Dak.	10,046
*Indianapolis, Ind.	364,161
Irvington, N. J.	56,733
Jackson, Mich.	55,187
*Jackson, Miss.	48,282
Jacksonville, Fla.	129,549
*Jefferson City, Mo.	21,596
Jersey City, N. J.	316,715
Johnstown, Pa.	66,993
Joliet, Ill.	42,993
Joplin, Mo.	33,454
*Juneau, Alaska	3,058
Kalamazoo, Mich.	54,786
Kansas City, Kans.	121,857
Kansas City, Mo.	399,746
Keene, N. H.	13,794
Kenosha, Wis.	50,262
Knoxville, Tenn.	105,802
La Crosse, Wis.	30,614
Lakewood, Ohio	70,509
Lancaster, Pa.	59,949
*Lansing, Mich.	78,397
Las Vegas, Nev.	5,165
Lawrence, Mass.	85,068
Lewiston, Me.	34,948
Lexington, Ky.	45,736
*Lincoln, Nebr.	75,933
*Little Rock, Ark.	81,679
Long Beach, Calif.	142,032
Lorain, Ohio	44,512
Los Angeles, Calif.	1,238,048
Louisville, Ky.	307,745
Lowell, Mass.	100,234
Lynchburg, Va.	40,661
Lynn, Mass.	102,320
McKeesport, Pa.	54,632
Macon, Ga.	53,829
*Madison, Wis.	57,899
Malden, Mass.	58,036
Manchester, N. H.	76,834
*Manila, Philippine Is.	285,306[1]
Medford, Mass.	59,714
Memphis, Tenn.	253,143
Meridian, Miss.	31,954
Miami, Fla.	110,637
Milwaukee, Wis.	578,249
Minneapolis, Minn.	464,356

[1]Latest figures available

Capitals and Largest Cities of the United States — *Continued*

	POPULATION
Minot, N. Dak.	16,099
Mitchell, S. Dak.	10,942
Mobile, Ala.	68,202
*Montgomery, Ala.	66,079
*Montpelier, Vt.	7,837
Mount Vernon, N. Y.	61,499
Muncie, Ind.	46,548
Muskogee, Okla.	32,020
Nashua, N. H.	31,463
*Nashville, Tenn.	153,866
Newark, N. J.	442,337
New Bedford, Mass.	112,597
New Britain, Conn.	68,128
New Castle, Pa.	48,674
New Haven, Conn.	162,655
New Orleans, La.	458,762
Newport News, Va.	34,417
New Rochelle, N. Y.	54,000
Newton, Mass.	65,276
New York, N. Y.	6,930,446
Niagara Falls, N. Y.	75,460
Nome, Alaska	852[1]
Norfolk, Va.	120,710
Oakland, Calif.	284,063
Oak Park, Ill.	63,082
Ogden, Utah	40,272
*Oklahoma City, Okla.	185,389
*Olympia, Wash.	11,743
Omaha, Nebr.	214,006
Oshkosh, Wis.	40,108
Owensboro, Ky.	22,765
Pago Pago, Samoan Is.	708
Parkersburg, W. Va.	29,023
Pasadena, Calif.	76,008
Passaic, N. J.	62,959
Paterson, N. J.	138,513
Pawtucket, R. I.	77,149
Pensacola, Fla.	31,579
Peoria, Ill.	104,969
Philadelphia, Pa.	1,950,961
*Phoenix, Ariz.	48,118
*Pierre, S. Dak.	3,659
Pine Bluff, Ark.	20,670
Pittsburgh, Pa.	669,817
Pittsfield, Mass.	49,677
Pocatello, Idaho	16,471
Ponce, Porto Rico	53,439
Pontiac, Mich.	64,928
Port Arthur, Texas	50,902
Portland, Me.	70,810
Portland, Ore.	301,815
Portsmouth, N. H.	14,495
Portsmouth, Va.	45,704
*Providence, R. I.	252,981
Pueblo, Colo.	50,006
Quincy, Ill.	39,241
Quincy, Mass.	71,983
Racine, Wis.	67,542
*Raleigh, N. C.	37,379
Reading, Pa.	111,171
Reno, Nev.	18,529
*Richmond, Va.	182,929
Roanoke, Va.	69,206
Rochester, N. Y.	328,132
Rockford, Ill.	85,864
Rock Island, Ill.	37,953
Roswell, N. Mex.	11,173
Rutland, Vt.	17,315
*Sacramento, Calif.	93,750
Saginaw, Mich.	80,715
St. Joseph, Mo.	80,935
St. Louis, Mo.	821,960
*St. Paul, Minn.	271,606
St. Petersburg, Fla.	40,425
St. Thomas, Virgin Is.	7,036
*Salem, Ore.	26,266
*Salt Lake City, Utah	140,267
San Antonio, Texas	231,542
San Diego, Calif.	147,995
San Francisco, Calif.	634,394
San Jose, Calif.	57,651
San Juan, Porto Rico	114,715
*Santa Fe, N. Mex.	11,176
Savannah, Ga.	85,024
Schenectady, N. Y.	95,692
Scranton, Pa.	143,433
Seattle, Wash.	365,583
Sheboygan, Wis.	39,251
Shreveport, La.	76,655
Sioux City, Iowa	79,183
Sioux Falls, S. Dak.	33,362
Somerville, Mass.	103,908
South Bend, Ind.	104,193
Spartanburg, S. C.	28,723
Spokane, Wash.	115,514
*Springfield, Ill.	71,864
Springfield, Mass.	149,900
Springfield, Mo.	57,527
Springfield, Ohio	68,743
Stamford, Conn.	46,346
Stockton, Calif.	47,963
Syracuse, N. Y.	209,326
Tacoma, Wash.	106,817
*Tallahassee, Fla.	10,700
Tampa, Fla.	101,161
Terre Haute, Ind.	62,810
Toledo, Ohio	290,718
Tonopah, Nev.	2,116
*Topeka, Kans.	64,120
*Trenton, N. J.	123,356
Troy, N. Y.	72,763
Tucson, Ariz.	32,506
Tulsa, Okla.	141,258
Union City, N. J.	58,659
Utica, N. Y.	101,740
Vicksburg, Miss.	22,943
Waco, Texas	52,848
Washington, D. C.	486,869
Waterbury, Conn.	99,902
Waterloo, Iowa	46,191
Wheeling, W. Va.	61,659
Wichita, Kans.	111,110
Wichita Falls, Texas	43,690
Wilkes-Barre, Pa.	86,626
Wilmington, Del.	106,597
Wilmington, N. C.	32,270
Winston-Salem, N. C.	75,274
Woonsocket, R. I.	49,376
Worcester, Mass.	195,311
Yonkers, N. Y.	134,646
York, Pa.	55,254
Youngstown, Ohio	170,002

[1] Latest figures available

Exports and Imports of the Leading Commercial Countries of the World

(From U. S. Commerce Yearbook and latest statistics available)

COUNTRY	PRINCIPAL IMPORTS	TOTAL VALUE OF IMPORTS	PRINCIPAL EXPORTS	TOTAL VALUE OF EXPORTS
Alaska[1]	Iron, steel, tin cans, machinery, oil, meats	$ 32,596,000	Fish, copper ore, furs, fur skins, gold, silver	$ 68,210,000
Algeria	Cotton cloth, clothing, paper, automobiles, sugar, machinery, petroleum	147,053,000	Wine, sheep, iron ore, leaf tobacco, wheat, fruits, nuts, olive oil	141,911,000
Arabia[2]	Cotton textiles, tea, coffee, sugar, rice	23,189,000	Dates, clarified butter, hides, grain, tobacco, camels	20,054,000
Argentina	Iron, steel, machinery, automobiles, cotton cloth, oils, foodstuffs	825,103,000	Wheat, corn, linseed, wool, chilled beef, hides	971,980,000
Australia	Machinery, chassis and bodies for motor cars, cotton and linen piece goods, iron, steel	736,400,000	Wool, wheat, wheat flour, butter, frozen meats	706,568,000
Austria[3]	Coal, coke, cotton and woolen goods, grain, silk	427,912,000	Iron, steel, cotton goods, yarns, metals, sawn wood	278,345,000
Belgium[3]	Coal, coke, wheat and flour, wool, machinery, cotton, diamonds (rough)	807,312,000	Iron, steel, diamonds (cut), coal, coke, cotton fabrics, wool, flax	738,913,000
Bolivia	Cotton cloth, wheat flour, machinery, motor cars, trucks	22,734,000	Ores (tin, silver, copper, lead), rubber	43,704,000
Brazil	Wheat, iron, steel, oil, coal, machinery	387,542,000	Coffee, hides, skins, sugar, cotton, cacao beans	431,464,000
British Guiana and British West Indies	Flour, textiles, clothing, machinery	78,354,000	Petroleum, cacao, coconuts, oranges	72,641,000
British India	Cotton piece goods, iron, steel, sugar, machinery, cotton yarns	000,137,000	Cotton, rice, tea, oilseeds, gunny cloth, jute	1,195,653,000
British Malaya	Para rubber, rice, tin ore, cotton piece goods, mineral oils, cigarettes	578,184,000	Para rubber, tin, copra, rice, pepper	599,427,000
Bulgaria	Textiles, metals, machinery	44,403,000	Leaf tobacco, corn, barley, eggs, beans	47,988,000
Canada	Coal, iron, steel, machinery, raw sugar, metals, wool	1,108,056,000	Wheat, paper, wheat flour, lumber, wood pulp, fur skins	1,250,456,000
Central America	Cotton cloth, refined oils, iron, steel, machinery	82,824,000	Coffee, sugar, bananas, cabinet woods	84,197,000
Ceylon	Rice, cotton piece goods, coal, sugar	147,458,000	Tea, rubber, copra, coconuts, coconut oil	174,078,000
Chile	Cotton fabrics, machinery, tools, iron, steel	120,510,000	Nitrate, copper, iodine, meats, wool	203,943,000
China	Cotton fabrics, rice and paddy, kerosene, cotton, sugar	854,408,000	Raw silk, bean cake, beans, cotton, tea	656,864,000
Colombia	Textiles, metals, foodstuffs, machinery	100,713,000	Coffee, gold, bananas, platinum, petroleum	109,986,000
Cuba	Cotton manufactures, iron, steel, rice	257,384,000	Raw sugar, tobacco, cigars, molasses	322,705,000
Czechoslovakia	Cotton, wool, wheat and flour, iron, steel, machinery	530,938,000	Cotton, silk, and wool manufactures, refined sugar, glass, glassware, wood, iron, steel	595,723,000
Denmark[3]	Iron, steel, coal, coke, oil cake, automobiles	443,400,000	Butter, pork, bacon, eggs, cattle	414,100,000
Dominican Republic	Cotton goods, iron, steel, rice, machinery	27,784,000	Raw sugar, cacao, leaf tobacco, coffee	31,179,000
Dutch East Indies	Cotton cloth, rice, iron, steel, machinery	343,148,000	Sugar, rubber, mineral oils, tin, tin ore, copra	638,556,000

[1] Trade of Alaska is with United States only. [2] Trade of Arabia is that passing through Aden only.
[3] In addition to coal and coke, these countries also import or export briquettes, bricks made from coal dust mixed with pitch.

Exports and Imports of the Leading Commercial Countries of the World — *Continued*

Country	Principal Imports	Total Value of Imports	Principal Exports	Total Value of Exports
Ecuador	Cotton manufactures, iron, steel, wheat flour, machinery	$ 9,451,000	Cocoa, tagua nuts, coffee, hats, rubber	$ 12,763,000
Egypt	Cotton piece goods, iron, steel, wheat flour, oils, fertilizers, coal	242,729,000	Cotton, cottonseed, cottonseed cake, onions, eggs, rice, sugar	241,011,000
Estonia	Grain, cotton, sugar, coal, coke, flour	25,713,000	Flax, timber, butter, cotton fabrics	28,207,000
Finland	Rye, machinery, sugar, wheat flour, coffee	160,924,000	Battens, planks, rough boards, wood pulp, paper, butter	159,328,000
France	Cotton, coal, coke, wool, oilseeds, raw silk, coffee, wheat, wines, precious stones	2,071,828,000	Clothing, millinery, silk, cotton, and woolen fabrics, pearls, precious stones, iron, steel	2,164,809,000
French Indo-China	Cotton fabrics, mineral oils, silk fabrics, machinery, iron, steel, sugar	92,902,000	Rice, fish, coal, rubber, zinc ore, pepper	124,898,000
Germany[1]	Cotton, wool, wheat, cotton fabrics, ores, slags, lumber, timber	3,860,356,000	Iron, steel, chemicals, machinery, cotton manufactures	2,565,401,000
Great Britain and Northern Ireland[1]	Cotton, meats, wheat, wheat flour, wool, timber, lumber, butter, sugar, tea, rubber, petroleum	5,927,000,000	Cotton piece goods, coal, coke, iron, steel, machinery, woolen goods	3,447,000,000
Greece	Wheat and wheat flour, cotton and woolen cloth, iron, steel, coal, mineral oils	166,346,000	Tobacco, currants, raisins, wine, olives	79,694,000
Haiti	Cotton piece goods, wheat flour, iron, steel	15,751,000	Coffee, raw cotton, raw sugar, logwood	15,290,000
Hawaii[2]	Iron, steel, oil, machinery, rice, automobiles	77,824,000	Raw sugar, pineapples (canned)	116,956,000
Hungary	Cotton and woolen cloth, wood, coal, coke	200,345,000	Wheat and wheat flour, live stock, refined sugar	139,843,000
Irak (Mesopotamia)	Cotton goods, sugar	88,338,000	Dates, grain, wool	33,500,000
Irish Free State	Wheat and flour, clothing, coal, corn, tea	205,636,000	Live stock, beer, ale, butter, bacon, eggs	214,701,000
Italy[1]	Cotton, wheat, coal, coke, wool, machinery, wood (rough and squared), oilseeds	1,051,055,000	Raw silk, cotton, rayon, and silk fabrics, fruits, nuts, hemp, cheese, automobiles	805,723,000
Japan	Cotton (ginned), iron, steel, oil cake, machinery, wood, wool, worsted yarns	1,033,137,000	Raw silk, cotton and silk tissues, cotton yarn, glass and glassware	944,558,000
Latvia	Cotton fabrics, sugar, wheat, coal, coke, machinery, rye	47,384,000	Flax, boards, planks, butter, linseed, rubber manufactures	42,501,000
Lithuania	Textiles, sugar, hardware, leather and manufactures of	26,569,000	Wood (sawn), flax, eggs, linseed, horses	24,593,000
Mexico	Iron, steel, machinery, automobiles, lard	163,589,000	Petroleum, copper, lead, henequen, coffee	294,700,000
Morocco[3]	Refined sugar, cotton fabrics, iron, steel, oils, tea	42,391,000	Phosphates, eggs, hides and skins, wheat	30,419,000
Netherlands[1]	Oilseeds, coal, coke, cereals and flour, corn, coffee, iron, steel, timber, lumber	1,022,346,000	Vegetables, refined sugar, vegetable oils, textiles, cheese, butter	761,974,000
Newfoundland	Textiles, flour, meat	25,814,000	Paper, codfish (dried), animal oils	30,000,000
New Zealand	Motor vehicles, mineral oils, cotton fabrics, wearing apparel, machinery	217,690,000	Wool, butter, mutton, lamb, cheese, hides and skins	231,244,000
Norway	Coal, coke, iron, steel, textiles	256,232,000	Wood pulp, fish, paper, lumber, timber	175,936,000
Palestine	Textiles, cigarettes, live animals, petroleum, barley, flour, rice	24,835,000	Oranges, soap, wine, melons, apricot paste, lemons	8,598,000
Paraguay	Cotton cloth, groceries, wheat, flour, grains, iron, steel	11,535,000	Quebracho extract, meat extract, maté, hides	13,754,000
Persia	Cotton textiles, sugar, tea, iron, steel	76,850,000	Petroleum, wool, carpets, opium, fruits, gums	107,762,000
Peru	Cotton manufactures, iron, steel, machinery, food stuffs	69,056,000	Sugar, cotton, mineral oils, copper bars	109,277,000
Philippines[2]	Cotton cloth, wheat flours, oil, iron, steel, machinery, automobiles	134,657,00	Sugar, hemp, coconut oil, copra	155,055,000
Poland[1]	Cotton, machinery, wool, steel, iron, wheat	324,962,000	Coal, coke, sugar, wood, zinc	282,255,000
Porto Rico[2]	Rice, cotton cloth, iron and steel, meats	95,247,000	Sugar, leaf tobacco, cigars, grapefruit	103,667,000
Portugal	Coal, cotton, codfish, oils, wheat, sugar, machinery, automobiles	120,156,000	Cork bark, wool, sardines, nuts, beeswax, rosin, fruits, wine	37,419,000
Romania	Cotton cloth, machinery, wheat, sugar, woolen stuffs, clothing	201,975,000	Barley, refined oils, pine boards, cattle, corn, wheat	227,803,000
Siam	Cotton fabrics, iron, steel, precious stones, gold leaf, gunny bags, cigarettes	89,000,000	Rice, teakwood, sticklac	107,000,000
Spain	Machinery, automobiles, cotton, chemicals, mineral oils, corn	353,947,000	Wines, olive oil, oranges, nuts, cork bark, iron ore	272,535,000
Sweden	Coal, coke, iron, steel, wheat, machinery, coffee, automobiles	424,768,000	Wood (sawn and pulp), machinery, paper, iron, steel	433,406,000
Switzerland	Silk, coal, coke, cotton, wheat, iron, steel	482,400,000	Watches, silk piece goods, machinery, cotton embroideries, cotton cloth, cheese	385,908,000
Syria	Cotton goods, flour, sugar, cotton thread, dyes	32,838,000	Sesame, oranges, lemons, nuts, silk cocoons, sponges, wool, hides	14,595,000
Tunisia	Metals and metal manufactures, men's clothing, cotton cloth	49,710,000	Phosphate rock, wheat, wheat flour, barley, olive oil	33,690,000
Turkey	Cotton, cotton goods, wool, woolen goods, foodstuffs, metals	122,574,000	Tobacco, opium, nuts, figs, raisins	98,096,000
Union of Socialist Soviet Republics	Cotton, wool, metals, hides and skins, rubber (crude)	367,036,000	Grain, petroleum, forest products, fur skins	396,830,000
Union of South Africa	Cotton manufactures, machinery, wearing apparel, iron, steel, motor cars, chassis	359,497,000	Gold, wool, diamonds, hides and skins	361,060,000
United States	Sugar, raw silk, coffee, rubber (crude), paper, fruits and nuts, wool and mohair, furs, copper, tin, wood pulp, burlap, hides and skins, petroleum and products	4,091,000,000	Cotton, mineral oils, wheat and wheat flour, automobiles, machinery, leaf tobacco, animal fats and oils, iron, steel, packing-house products	5,030,000,000
Uruguay	Mineral oils, textiles, sugar, coal	85,130,000	Wool, chilled and frozen beef, hides, skins	97,970,000
Venezuela	Cotton cloth, machinery, iron, steel, wheat flour	75,723,000	Coffee, petroleum, cacao beans	76,155,000
Yugoslavia	Cotton and woolen cloth, iron, steel, cotton yarn, machinery	128,239,000	Timber, wheat and wheat flour, live stock, eggs, corn, meats	112,643,000

[1] In addition to coal and coke, these countries also import or export briquettes, bricks made from coal dust mixed with pitch. [2] Trade of Hawaii, Philippines, and Porto Rico is with the United States only. [3] Trade with Morocco is for French zone only.

SUGGESTIONS FOR COLLATERAL READING

In the following list collateral readings are suggested for each major division of the text. It is not intended that any one pupil should read all the references in any section. They are to be used, rather, for individual assignments and in solving problems. All references are given by pages, and when no reference to pages is made, the book as a whole is to be read. Preceding the lists by chapter with page references is a complete list of all the titles arranged alphabetically. This list has been prepared solely as an aid in ordering books or in finding them in the library catalog. Magazine articles are not listed here, but the teacher should not overlook them in making assignments. Such magazines as the *National Geographic*, *Asia*, and *Economic Geography* will be found especially helpful. The teacher who wishes to add to the material available in her school for geography assignments would do well to provide herself with a copy of the *Teachers College Bulletin* No. 81, July 1, 1923, published by the Eastern Illinois State Teachers College, Charleston, Ill. The bulletin is entitled *Material on Geography Which May Be Obtained Free or at Small Cost.*

AN ALPHABETICAL LIST OF THE BOOKS

Adams, Cyrus C., *An Elementary Commercial Geography* (D. Appleton & Co.)

Alee, Warder C., and Marjorie Hill, *Jungle Island* (Rand McNally & Co.)

Allen, Nellie B., *Asia* (Ginn & Co.)

——*The New Europe* (Ginn & Co.)

——*North America* (Ginn & Co.)

——*South America* (Ginn & Co.)

Blanchard, Raoul, and Todd, Millicent, *Geography of France* (Rand McNally & Co.)

Bogart, Ernest Ludlow, *The Economic History of the United States* (Longmans, Green & Co.)

Bowman, Isaiah, *South America: A Geography Reader* (Rand McNally & Co.)

Breasted, James Henry, *A History of Ancient Egypt* (Charles Scribner's Sons)

Brigham, Albert Perry, *Commercial Geography* (D. Appleton & Co.)

Brooks, Eugene Clyde, *The Story of Corn* (Rand McNally & Co.)

——*The Story of Cotton* (Rand McNally & Co.)

Brunhes, Jean, *Human Geography* (Rand McNally & Co.)

Chamberlain, James Franklin, *Geography* (J. B. Lippincott Co.)

Chapman, Arthur, *The Story of Colorado* (Rand McNally & Co.)

Crissey, Forrest, *Story of Foods* (Rand McNally & Co.)

Davis, Benjamin Marshall, *The Human Body and Its Care* (Rand McNally & Co.)

Gregory, Herbert Ernest; Keller, Albert Galloway; and Bishop, Avard Longly, *Physical and Commercial Geography* (Ginn & Co.)

Gregory, J. W., *Africa: A Geography Reader* (Rand McNally & Co.)

Hall, Jennie, *The Story of Chicago* (Rand McNally & Co.)

Hardy, M. E., *An Introduction to Plant Geography* (Clarendon Press, Oxford)

Huntington, Ellsworth, *Asia: A Geography Reader* (Rand McNally & Co.)

——*The Human Habitat* (D. Van Nostrand Company)

Huntington, Ellsworth, and Cushing, Sumner W., *Modern Business Geography* (World Book Company)

——*Principles of Human Geography* (John Wiley & Sons)

Huntington, Ellsworth, and Williams, Frank E., *Business Geography* (John Wiley & Sons)

Keltie, J. Scott, and Howarth, O. J. K., *History of Geography* (G. P. Putnam's Sons)

Newbigin, Marion, *Animal Geography* (Clarendon Press, Oxford)

Nida, Stella Humphrey, *Panama and Its "Bridge of Water"* (Rand McNally & Co.)

Robinson, Edward Van Dyke, *Commercial Geography* (Rand McNally & Co.)

Skeat, E. G., *The Principles of Geography* (Clarendon Press, Oxford)

Smith, J. Russell, *Commerce and Industry* (Henry Holt & Co.)

Werther, William B., *How Man Makes Markets* (The Macmillan Co.)

Whitbeck, R. H., and Finch, A. C., *Economic Geography* (McGraw-Hill Book Co.)

REFERENCES FOR COLLATERAL READING

HOW THE EARTH HAS BECOME KNOWN, Pages 1–6

Breasted, *A History of Ancient Egypt*, pp. 3–4, 29–39; Brooks, *The Story of Corn*, pp. 44–73; Brunhes, *Human Geography*, pp. 46–52; Chamberlain, *Geography*, pp. 1–17; Gregory, *Africa*, pp. 143–63; 224–34, Keltie and Howarth, *History of Geography*, pp. 1–10, 71–82, 90–110, 132–51; Werther, *How Man Makes Markets*, pp. 1–14.

THE NECESSITIES OF LIFE, Pages 7–15

Brigham, *Commercial Geography*, pp. 190–94; Brooks, *The Story of Corn*, pp. 1–43; Brooks, *The Story of Cotton*, pp. 1–19; Brunhes, *Human Geography*, pp. 36–41; Crissey, *The Story of Foods*, pp. 9–16; Davis, *The Human Body and Its Care*, pp. 235–60; Huntington and Cushing, *Principles of Human Geography*, pp. 6–8, 36–41, 186–203, 430–49; Huntington and Williams, *Business Geography*, pp. 116–32, 393–400; Robinson, *Commercial Geography*, pp. 440–55; Smith, *Commerce and Industry*, pp. 12–23, 183–90; Whitbeck and Finch, *Economic Geography*, pp. 161–78.

PRODUCTS FOR HOME USE OR MANUFACTURING AND TRADE, Pages 16–23

Adams, *An Elementary Commercial Geography*, pp. 66–122; Bogart, *The Economic History of the United States*, pp. 1–9; Brigham, *Commercial Geography*, pp. 145–59; Brooks, *The Story of Cotton*, pp. 302–14; Brunhes, *Human Geography*, pp. 41–42, 230–34, 335–38; Chamberlain, *Geography*, pp. 273–346; Crissey, *The Story of Foods*, pp. 36–77, 87–161, 184–223, 238–65, 271–301, 355–460; Huntington and Cushing, *Modern Business Geography*, pp. 110–40; Huntington and Cushing, *Principles of Human Geography*, pp. 153–85, 319–28; Huntington and Williams, *Business Geography*, pp. 6–16, 44–52, 135–47, 181–99; Robinson, *Commercial Geography*, pp. 78–97; Smith, *Commerce and Industry*, pp. 62–66, 137–44, 200–20, 285–301; Whitbeck and Finch, *Economic Geography*, pp. 105–19, 121–42, 155–60, 192–202.

PRODUCTS MADE FROM RAW MATERIALS: MANUFACTURING, Pages 24–29

Adams, *An Elementary Commercial Geography*, pp. 123–29; Bogart, *The Economic History of the United States*, pp. 53–63; Brigham, *Commercial Geography*, pp. 202–28; Crissey, *The Story of Foods*, pp. 78–86, 162–83, 234–37, 302–54; Huntington and Cushing, *Modern Business Geography*, pp. 235–43; Huntington and Williams, *Business Geography*, pp. 201–12; Smith, *Commerce and Industry*, pp. 145–49, 244–45.

HOW TRADE HELPS TO SATISFY MAN'S NEEDS, Pages 29–39

Adams, *An Elementary Commercial Geography*, pp. 1–4, 130–45; Brigham, *Commercial Geography*, pp. 92–110, 229–55; Chamberlain, *Geography*, pp. 347–69; Crissey, *The Story of Foods*, pp. 17–35, 224–33, 250–70, 461–501; Huntington and Cushing, *Modern Business Geography*, pp. 159–201; Huntington and Williams *Business Geography*, pp. 83–114; Robinson, *Commercial Geography*, pp. 1–14, 39, 59–77; Smith, *Commerce and Industry*, pp. 12–23; Whitbeck and Finch, *Economic Geography*, pp. 225–28.

HOW PEOPLE ARE BENEFITED BY GROUP LIFE, Pages 40–47

Brigham, *Commercial Geography*, pp. 180–90; Gregory, Keller, and Bishop, *Physical and Commercial Geography*, pp. 3–33; Huntington and Cushing, *Modern Business Geography*, pp. 207–21; Huntington and Cushing, *Principles of Human Geography*, pp. 122–24, 131–33, 139–43; Huntington and Williams, *Business Geography*, pp. 214–25; Robinson, *Commercial Geography*, pp. 26–28; Skeat, *The Principles of Geography*, pp. 352–64; Werther, *How Man Makes Markets*, pp. 21–50.

HOW MAN DEPENDS UPON PLANTS, Pages 48–55

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INDEX AND PRONOUNCING VOCABULARY

Authority for pronunciation: *Webster's New International Dictionary.*

Key to pronunciation: ā, as in āle; â, as in senate; â, as in câre; å, as in åsk; ȧ, as in finăl; ä, as in ärm; á, as in ásk; ȧ, as in sofȧ; ē, as in ēve; ẽ, as in crẽate; ȅ, as in ȅnd; ẽ, as in novẽl; ė, as in cinder; ī, as in īce; ĭ, as in ill; ō, as in ōld; ô, as in ôbey; ó, as in ôrd; ŏ, as in ŏdd; ȯ, as in cónnect; ó, as in sóft; ōō, as in fōōd; o͝o, as in fo͝ot; ou, as in thou; th, as in thin; th, as in this; ū, as in pūre; ú, as in únite; u͂, as in ûrn; u͂, as in stu͂dy; u͂, as in circu͂s; κ for ch, as in *German* ich, ach; ŋ (like ng), for n before the sound k or hard g, as in baŋk. N indicates the nasal tone, as in *French*, of the preceding vowel; tû for tu, as in natûre, indicates the elision or reduction of a vowel to a mere vocal murmur; g, as in go.

The following abbreviations are used:

Alb. Albanian	Est. Estonian	Jap. Japanese	Rom. Romanian
Ar. Arabic	Finn. Finnish	Lett. Lettish	Russ. Russian
Bulg. Bulgarian	Fr. French	Lith. Lithuanian	Serb. Serbian
Dan. Danish	Ger. German	Nor. Norwegian	Sp. Spanish
Du. Dutch	Gr. Greek	Pol. Polish	Sw. Swedish
Eng. English	It. Italian	Port. Portuguese	Turk. Turkish

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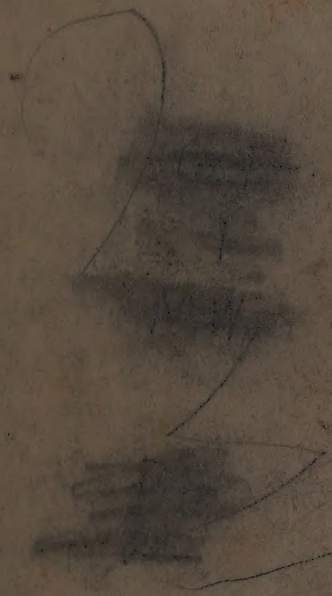
R.B.

K.P.



We have to get thing
from

1. Do we have to buy th
from other countries
2. What do we buy? Coffee
spices.
3. Do they buy things fr
ours? Yes.
4. What kinds of transportat
do they have? Ai, rail, s
5. Do we have ships to have trans
Yes.
6. What would we do with
out transportation? Do w
out.
7. If we are whole what do
we have to have? Roads.
8. What do the steamships c
Mail & Passenger.
9. Do we have different
kinds of transportation?
Yes.
10. What one thing do you
know with you know that
might have come around
the ocean? We have.

Your pupil Martha